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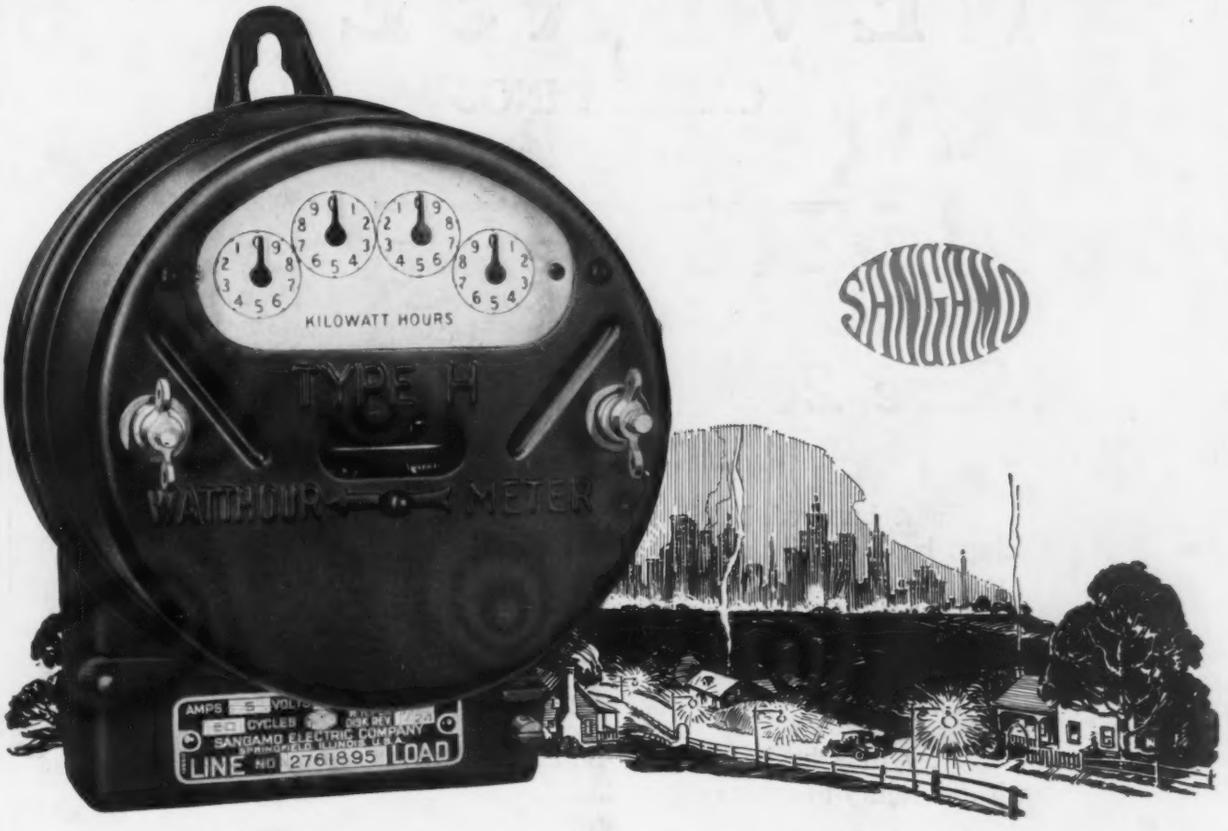
Journal of Electricity

Devoted to the Economic Production and Commercial Application of Electricity
IN THE ELEVEN WESTERN STATES



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Journal of Electricity

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IN THE ELEVEN WESTERN STATES

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An Admonition and Some Advice

WITH the convention of the National Electric Light Association six weeks ahead, the hotel committee has received in excess of one thousand registrations. By far the greatest majority of these are from the East, which inclines us to issue a word of warning and a challenge to men in the electrical fraternity in the West.

The forty-eighth convention of the N.E.L.A. is the most important thing that has happened in the West electrically in the past five years. For this reason it is highly important that the West itself be one hundred per cent represented at the meetings. The industry in this section has a message that it must give to the Eastern visitors. It will also profit from the message which the Easterners themselves will bring. Aside from this the West is the host at this gathering, and as such it must be on hand in force.

Expectations are that the convention will be attended by four or five thousand leaders in the industry, over half of whom will be from east of the Rocky Mountains. These are the men who have sent in their hotel reservations. Western men should have settled in their own minds whether or not they can attend the convention. The hotel committee urges that they make this decision final by sending in their reservations. While space in three or four leading hotels in the city will be consumed largely in accommodating the Eastern visitors, there are many hotels in the city just as modern and just as comfortable. Those in charge of the convention want no one to stay away through fear of not being accommodated. Send in your reservations at once. You may rest assured that you will be accorded the best the city can provide.

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EDITORIAL

The Electragist's Policy of Distribution

"THAT there may be no question concerning the attitude of the Association of Electragists, International, your executive committee on March 17 unanimously agreed that the only trade policy that can be justified as economically sound is that the distribution of electrical merchandise should be from manufacturer through jobber to contractor and dealer to consumer."

These are the words of Joseph A. Fowler, president of the Association of Electragists, International, and voice the judgment of the executive committee as expressed by resolution on the date above written.

There can be no question as to the soundness of this policy, nor can there be any question as to the desirability of having a definite statement as to that policy, clear, concise and to the point. It is axiomatic that before one may proceed to the solution of a problem it is essential first to state the hypothesis. Here, then, is the hypothesis. Now comes the problem—how may this trade policy be made effective?

There are some manufacturers who sell direct to consumers, some jobbers who do the same. There is the so-called "courtesy" discount, and many other trade evils that have sprung up like weeds in the garden of the electrical industry to the disadvantage of the distribution structure and the creation therein of a condition of disorderliness that makes for irresponsibility and unsatisfactory service to the consumer.

It is idle to preach abstract business morality. Reform of bad practices must be brought about through contact with the pocket nerve. The task that lies before the industry consists in translating the policy outlined by Mr. Fowler into terms of its beneficial effect upon the pockets of those who abide by its provisions. If the manufacturer, or jobber or contractor-dealer can be shown that every time he attempts to by-pass the established channels of distribution he is sacrificing his own interests and those of his fellows for the sake of a temporary advantage, there is a new era ahead of the electrical industry.

The first step, so far as the West is concerned, would appear to be the passage of resolutions indorsing the Electragists' trade policy by electrical organizations wherever possible, and the distribution of such resolutions among the membership. The California Electrical Bureau, the Pacific Coast Electrical Association, the Pacific Coast Jobbers' Association, and the various electric leagues and clubs might well make this a part of their order of business at forthcoming meetings. Such resolutions as expressions of the organized electrical industry should go far toward bringing about an intelligent conception on the part of the individual that his best interests would be served by a conscientious adherence to this policy.

However, there is another angle to the question. The Pacific Coast probably approaches more closely to the actual practice of this policy than any other section of the country for several reasons. We are located geographically a long way from the great manufacturing centers, and our metropolitan districts are fewer in number. This lessens to a marked degree the problems of close contact among the various branches of the industry. There is a peculiar bond of craft fellowship which permeates the whole industry, and, as friendship is the greatest eliminator of business friction, we are in a much happier position than some other parts of the country.

The industry must not pat itself on the back, however, and say, "We should worry about the other fellow's problems." The gap between the East and the West is slowly but surely closing. Great mergers are taking place, and Eastern capital is looking to the Pacific Coast as a favorable place for investments. As more and more Eastern capital comes in, there must come a better understanding of common problems and a closer bond of fellowship and cooperation.

In backing up the Electragists on their policy of distribution the West is afforded an opportunity of dropping its self-sufficient attitude, and through its contacts with our national organizations to bring to bear its combined thought and influence to the end that rather than a group of separate units the electrical industry may take its place as the greatest in the country.

This is a task worthy of the metal of our best thinkers and hardest workers. The West always has been to the forefront in electrical developments. Is there any reason why it should not take the lead in an endeavor to bring about a closer understanding nationally among the various branches of the industry? And this not for personal glorification and not alone for the benefit of other parts of the country, but for the continued security and improved conditions of the happy business relationships we enjoy today.

For Utility Executives of the Northwest

AMONG the comments made on the successful meeting of the Technical Section of the Northwest Electric Light and Power Association recently held at Spokane was one to the effect that if the executives of the member companies realized more fully the value to the companies of the work undertaken by this important section, more time could be obtained to hold such a meeting and a greater good would result from a more complete discussion of the subjects presented. This thought was voiced in the meeting, and while we do not aspire to the self-appointed task of mentor in the circumstance, nevertheless we do not refrain from comment.

The record attendance of 120 delegates and visitors, or an increase of 38 per cent over the attendance at last year's meeting, which was the first of its kind, speaks volumes for the prestige that the meeting has attained in one year. When it is realized that many of those attending were not, strictly speaking, participants, but rather were interested listeners from some branch or other of the electrical industry, eager to learn, anxious to keep pace with the latest engineering thought as developed by central-station practice, that statement becomes the more convincing.

A resume of the proceedings of this meeting is published elsewhere in this issue. We challenge to a cursory perusal of this resume those who may claim to have little interest in technical affairs, those who perhaps may think of the engineer as a necessary evil. We ask them to note how many references are made to the relation of the work of the Technical Section to other sections perhaps thought to be more important. We invite attention to the volume of pure and unadulterated economics delved into by the participants in the discussions—the dollar-and-cents application of technical theory to the practical job of operating a power system. If there was one subject among those presented that did not contribute much to the wealth of knowledge demanded of those entrusted with the job of keeping down investment or maintenance or operation costs, of operating efficiently and safely any part of the system, of giving satisfactory service to customers, then our judgment is wrong. If any such man came away from that meeting without having sensed the opportunity to make himself a better man in his job, then this editorial is idle chatter and we have wasted space.

Electricity Finds a New Use in the Food Industry

WORD has been received from Melbourne, Australia, that electricity is being successfully employed for defrosting meat. Frozen carcasses taken from cold storage warehouses at temperatures of 5 deg. F. are raised to 40 deg. F. in a very few minutes as a result of the new process. The system employed is exceedingly simple. Current is passed through the carcass by means of steel electrodes at the head and tail. When the temperature reaches 40 deg. the current automatically is shut off. The condition of the meat after defrosting is said to be almost perfect, the meat being similar in appearance to freshly killed carcasses, with no trace of sweat or flabbiness. With the processes formerly employed the time required to defrost a carcass ranged from seven to thirteen hours, depending upon the animal in question. The meat also showed traces of having been kept in cold storage, notably in its flabbiness and sweaty appearance.

This announcement adds one more application of electricity to the long list of its uses in the preparation of food products. It already furnishes motive power for operating precooling and refrigerating plants. It is being employed successfully in the dehydration of fruits, nuts, vegetables and even eggs. There are few processes in the growing, harvesting, preserving and preparation of the food we eat that electricity does not enter into. As time goes on there will be other even more important applications of electric energy in the food industries.

Success of June Bride Campaign Rests with the Industry

THE California Electrical Bureau has perfected plans for a bigger and better June Bride electric appliance campaign for 1925. On another page of this issue the details for this year's sales drive are outlined. There are several radical changes. Instead of a June Bride Week, the campaign will continue over a period of six weeks so that the industry may capitalize to the fullest extent upon the custom of presenting the June bride with suitable wedding gifts.

The importance of this campaign to the industry cannot be overemphasized. Such an opportunity for increasing appliance sales comes but twice each year, at Christmas and in June.

It is the duty of the industry to see that the campaign is successful. The Electrical Bureau can only initiate such movements. It cannot be responsible for their success. It prepares and distributes the sales and window display material. The burden of using the material to greatest advantage rests with the jobber, the contractor-dealer and the appliance shop. The Bureau writes the play and furnishes the "props." The industry must furnish the actors.

A Mistake or A Challenge

MUCH talk is devoted to truth in advertising, and one of the chief reasons for the existence of the Better Business Bureau is to see that merchants do not make untruthful or misleading statements regarding their products through the public press. Occasionally, however, unwitting misrepresentations appear in advertising copy in spite of all precautions. The accompanying advertisement is an example of the misguided efforts of an ignorant copy writer.

The advertisement itself is one of a series being run in the newspapers of a large Western city by a wholesale grocery. When the attention of the advertising agency which prepared the copy was called

to the obvious mistakes, error was admitted in the case of the hybrid percolator but not in the case of the (in)convenience outlet. The agency claimed that 85 per cent of the women using electric percolators connect them in this fashion and that only three out of ten coffee utensils are electric. Under the circumstances they held that to present an illustration depicting the housewife in any other pose would be misrepresentation.

If the statements of the advertising agency are correct, then the electrical industry is at fault. If not, then the advertisement is an excellent sales argument for the contractor-dealer or central station engaged in selling better wiring and more convenience outlets. At any rate we feel that the advertiser in this particular case has not kept the standard of his illustration up to the quality of the product he is advertising. Let the electrical industry cooperate with other industries to prevent such mistakes from recurring.

DISCUSSION

Los Angeles Electric Club Pays Tribute to the Memory of J. A. Lighthipe

To the Editor:

Sir—The Electric Club of Los Angeles had planned to have the late James A. Lighthipe conduct one of its meetings in the near future. Failing in the realization of these plans, they devoted a large part of the regular meeting of April 20 to a review of the contributions of Mr. Lighthipe to the engineering advancement of the electrical industry. Comments brought forth at this meeting showed the deep feeling held for him by all of his former associates and acquaintances.

Of all of the tributes which have been paid to Mr. Lighthipe, I believe that the following, which appeared in the April 20 issue of "Sparks," the official organ of the Electric Club, is the most appropriate:

James Alfred Lighthipe

AN APPRECIATION

"It is easy in the world to live after the world's opinions; it is easy in solitude to live after our own; but the great man is he who in the midst of the crowd keeps with perfect sweetness the independence of solitude."

Such a man has passed from our midst. He will be missed sincerely by all true men. He was a rare combination of scientist and practical engineer—a pioneer with the thoughts of an idealist, yet never losing sight of the practical considerations of his profession.

But it was the kindly humanity of the man that lent to the charm of his personality. He was unspoiled by honors that were accorded to him and he enjoyed the successes of his fellowmen even more than his own. His character and goodness still live with us.

"There was—there is no stronger, manlier man."

H. E. BARDEN,
Southern California Edison Company.

Los Angeles, April 22, 1925.

Reader Contends Engineers Have Equal Chance with Lawyers as Executives

To the Editor:

Sir—After perusal of the editorial in the April 1 issue entitled "Specialization and the Executive of the Future" it seems to me that it would be impossible for engineers to finish its reading without saying to themselves, "Oh, what's the use," or words to that effect. To those who may have been so tempted I would like to say for their consolation that there are striking cases in recent history where executives were not trained to be lawyers at college.

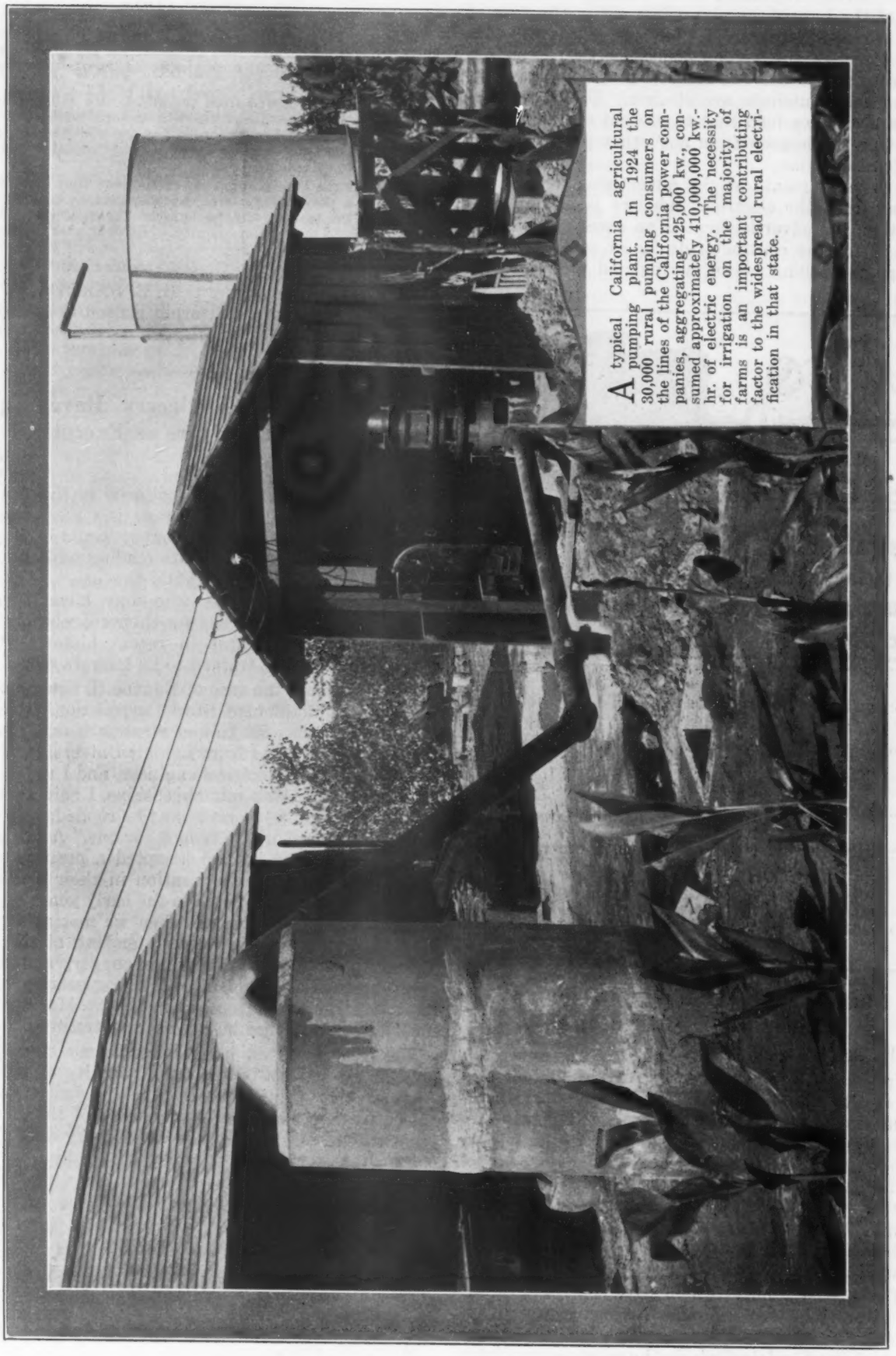
I have in mind the case of Eugene G. Grace, president of the Bethlehem Steel Corporation, whom I have the pleasure of calling classmate and friend. Mr. Grace graduated from Lehigh University, Bethlehem, Pa., as an electrical engineer, and I remember the day we received our sheepskins I said to him, "Gene, have you a job yet?" and he replied, "No, and I don't know just where to look for one." A few days after this I heard he had accepted a position with the Bethlehem Steel Corporation in their electrical department, such as it was in the early years of this century. Five years later, when we met at a class reunion, he was general superintendent, at the ten-year reunion he was general manager, and after twelve years was president of that corporation, and I have it straight the end is not yet. Mr. Schwab must have confidence in engineering training.

Mr. Grace was an honor man in my class—not only in his studies but in every activity of college. Among other things he featured baseball through his entire four years and was captain of the varsity team three years. I am sure that every one of his classmates is proud and happy to see him so successful.

If any budding engineer can take hope from this biography I will feel I have contributed something to their salvation and peace of mind.

CHAS. M. MASSON,
Southern California Edison Company.

Los Angeles, Calif.
April 13, 1925.



A typical California agricultural pumping plant. In 1924 the 30,000 rural pumping consumers on the lines of the California power companies, aggregating 425,000 kw., consumed approximately 410,000,000 kw.-hr. of electric energy. The necessity for irrigation on the majority of farms is an important contributing factor to the widespread rural electrification in that state.

The White Bluffs-Hanford Land Settlement Experiment

By H. W. Cooper

District Manager, Pacific Power & Light Company, Pasco, Wash.

LAND settlement schemes, involving state or district financial aid in development, have met with varying degrees of success. One of the newest of such schemes in the Northwest is described by a man whose company had much to do with the solution of the irrigation problem involved. Incidentally the project bids fair to be altogether successful.

BY an act of the legislature of the State of Washington in 1919, and a subsequent revision of the act, an appropriation of approximately $500,000 was made from the reclamation revolving fund for land settlement for the purpose of acquiring, developing and settling the White Bluffs-Hanford Land Settlement Project. This project had a double purpose: first, to reclaim arid lands, and second, to extend credit and opportunity to war veterans of the state. By the reclamation of its arid lands the state not only lays the foundation for increasing its industrial population, but also enhances the value of its natural resources, and in searching for an equitable compensation for the war veteran the idea of helping him to become self-supporting on his own land was carried out through this plan of "Soldier Settlement."

Location of Project and Conditions of Settlement

In selecting a site for this project the state chose some land between White Bluffs and Hanford, Wash., on the Columbia River about 50 miles north of Pasco and 20 miles east of Priest Rapids. Here the unimproved land is comparatively cheap, the soil is such that a variety of crops can be raised successfully with the aid of water, and abundant water is available in most spots a short distance below the surface of the ground. In this general district, the state in 1922, under the provisions of the original act, acquired by purchase 1,160 acres, dividing this land into 58 tracts of 20 acres each. In 1924, when the original act was extended by law, 840 additional acres were purchased, or enough for 42 more tracts, so that now the project contains 100 twenty-acre tracts. These tracts are not geographically contiguous but lie in scattered groups of from five to ten tracts each, since the lands purchased were those that were available, due regard being given to the topography for irrigation, the availability of water, and the fertility of the soil, rather than to their geographic situation.

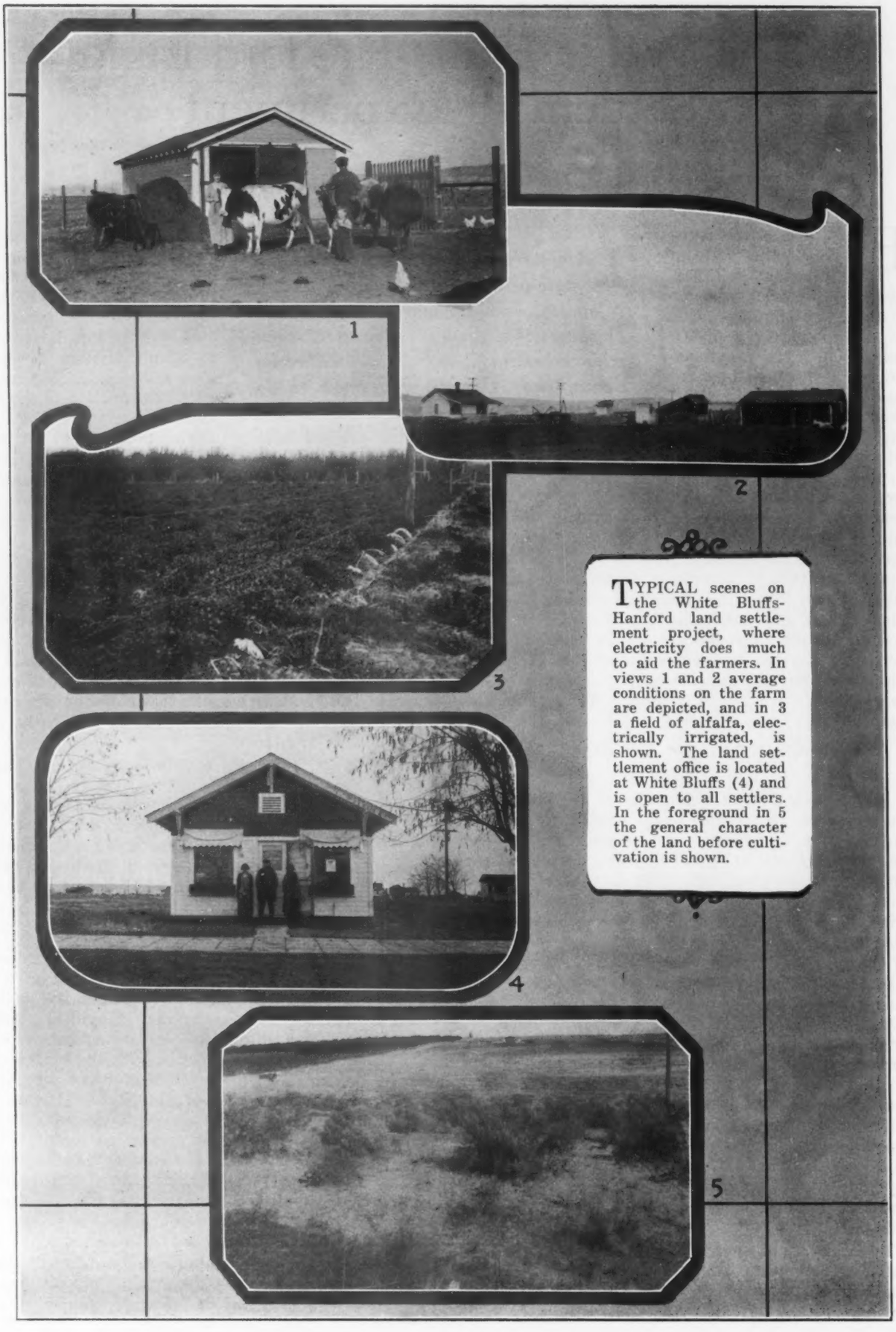
In order to make the project economically successful, each applicant was required to have certain qualifications: first, that he be an ex-service man; second, that he be experienced in farming to some degree; and third, that he have at least $1,500 or its equivalent. To facilitate the prompt settlement of the project, the first qualification was modified recently to admit civilian settlers. This modification was made with the sanction of the executive committee of the State Department of the American Legion, which, realizing that colonization of the project was proceeding too slowly, requested the state to hold it open no longer to ex-service men exclusively. The reason for the second qualification is that, since both the settler and the state make material investments in the tract, it is desirable that the settler know something about farming. As to the third qualification, part of the $1,500 required of the settler must be paid to the state as the initial payment on the tract he selects, and the balance constitutes an amount thought sufficient for living expenses during the early development of the tract.

J. C. Scott, formerly county agent of Franklin County, Wash., who is in charge of the project with an office in White Bluffs, not only manages the project generally but also assists each settler in solving his many farming problems. Through his knowledge of experimental and practical agriculture he has been able to help many settlers get a good start on their farms.

Irrigation Problem

Among the first considerations by the state in preparing the tracts for settlement was that of the problem of irrigation. After deliberation it was decided to dig a well on each tract, provide an individual pumping unit, and let each owner control his own use of water. In connection with the consideration of the kind of motive power for the pumping units, the state approached the Pacific Power & Light Company, which was serving other ranches in that vicinity with irrigation power. After negotiations had been completed, the company had agreed to run the necessary distribution lines with transformers and secondaries to operate the pump motors, and the state had agreed to guarantee for six years a revenue of $35 per hp.-yr. of installed capacity.

The first investment made by the state after purchase of the land was in test wells dug on each tract to discover the adequacy of the water supply. Dur-



TYPICAL scenes on the White Bluffs-Hanford land settlement project, where electricity does much to aid the farmers. In views 1 and 2 average conditions on the farm are depicted, and in 3 a field of alfalfa, electrically irrigated, is shown. The land settlement office is located at White Bluffs (4) and is open to all settlers. In the foreground in 5 the general character of the land before cultivation is shown.

ing this period of experimentation the company ran its lines and connected to the pumping equipment in each test well, the state agreeing to pay the cost of moving any line and equipment in case it was found necessary to abandon any particular tract on account of lack of water. In a few instances it was found advantageous to combine the best parts of two adjoining tracts into one tract, discarding that part of each found to be unsuitable for cultivation or uneconomical to water. In the final installation there is installed on each tract a De Laval pump direct-connected to a General Electric Company motor, the sizes of which run from 3 to 10 hp., according to the amount of water required and the height of the lift. This equipment, which was installed by the A. B. Fosseen Company, Yakima, Wash., under the direction of Eck Baughn and W. H. McMurray, has proved satisfactory, and only in a few cases has it been necessary to increase the size of the motor originally installed.

Investment and Revenue of the Power Company

The irrigation load as it stands at present consists of four 10-hp. motors, seventeen 7½-hp. motors, and seven 3-hp. motors, making a total of 102 motors with a total connected load of 558½ hp. The apparent discrepancy between the number of motors and the number of tracts is accounted for by the fact that some tracts have more than one motor. Under the agreement between the state and the company, the state pays annually about $19,500, and the company made extensions aggregating approximately 25 miles of 6,600-volt distribution lines with the necessary transformers, secondaries, services and meters, at a total cost of slightly less than $46,500.

This arrangement between the state and the company has proved to be reasonably satisfactory. When it is realized that the investment in distribution lines of the Pacific Power & Light Company is about 30 per cent of the total investment in plant, it may be seen that this investment of $46,500 represents a total investment in plant of over $150,000. Therefore it may be assumed that the state is relieved of the necessitiy of making a considerable investment in irrigation facilities for the project, that would have been necessary under any other scheme of electric pumping without the cooperation of a utility company. From the standpoint of the company, the revenue of $19,500 is somewhat less than would be required for a similar investment under the line-extension rules of the State Department of Public Works, but if the project is successful, so that approximately the same revenue is received from it for a number of years after the expiration of the guarantee period, the business will prove to be profitable; and, too, the revenue from domestic power and light will serve to augument this amount from the beginning. Of course the company was actuated largely by a desire to cooperate in a public enterprise, and the success of the project will tend to encourage other development in the same general district, which will inure to the benefit of the company.

On each tract there has been constructed a three-room plastered cottage with built-in features, including cooling closet in the kitchen, wiring for electric lights, an 8x12-ft. back porch, ample front porch, and a 9x9-ft. cellar with concrete walls. There has been constructed also on the tract a combination barn and cow shed, occupying a space 16x30 ft., and a small modern poultry house. These buildings will house two horses, two cows and 100 chickens. All buildings have been erected on concrete foundations and are painted attractively. In instances where the prospective settler has additional funds a deviation from this uniform building plan may be made.

State Aid to the Settlers

The settler, having first made the necessary application and been accepted, is required to move onto the tract within six months and must live on it at least eight months of each year. If desired, the state will furnish financial assistance for certain improvements such as clearing, leveling and seeding the tract, rabbit-proof fencing, flumes for irrigation distributing systems, and, in addition, will pay the electric power bill for pumping for the first three years. Recent legislation in connection with the project permits the state to buy cows for the settlers whenever application is made, provided, however, that the settler has sufficient feed for such stock. Under the provisions of this law the settler repays the state at the rate of $5 per month per cow plus six per cent interest on the unpaid balance.

The total investment by the state in lands, buildings, improvements and power bills, in cases in which the settler has elected to accept all the financial aid available, amounts approximately to $5,000 per tract. To repay this the settler must make an initial payment of $612.50. During the next three years he is required to pay only four per cent interest on the unpaid balance, and after this so-called development period he amortizes this balance by an annual payment equal to $7.36 for each $100 owed. This will pay the annual interest and discharge the principal in twenty years.

Of the total of 100 tracts fifty have already been colonized and developed in whole or in part, and a number of prospective buyers are expected to sign up this year (1925). The settlers now on the tracts plan to devote about one-half of their acreage to feed for dairy cows, hogs and chickens, and the remainder to early fruit and vegetables. Since the territory is favorably located with respect to markets, has an average growing season of 204 days, and, according to government reports, matures crops earlier than any other locality in Washington, it would seem that the project has the best of chances to work out successfully. Some of the first settlers have made material headway in placing their tracts under cultivation, even in the face of adverse agricultural conditioins in 1922 and 1923. A great diversity of products has been raised successfully during the first two years, and the addition of stock and poultry has aided materially in stabilizing the income from these tracts. It is expected that the project will be under complete cultivation in a few years.

The South San Francisco plant of the Pacific Coast Steel Company

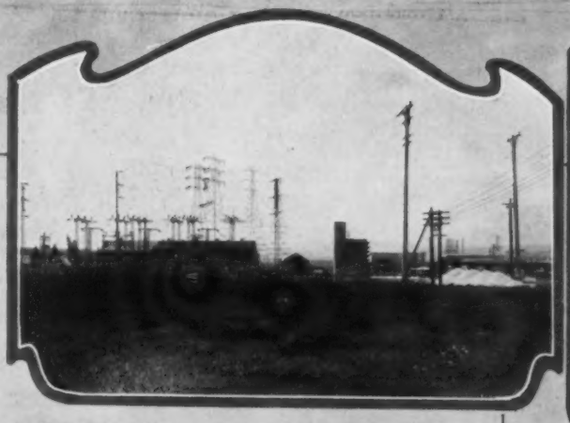
Electricity Simplifies Operation of a Modern Steel Mill

By C. H. Tallant
Pacific Coast Steel Company, San Francisco

ELECTRIC power plays an important role in the manufacture and fabrication of steel on the Pacific Coast. In the plant described in this article the total motor load is 8,200 hp. and the annual power consumption 8,910,000 kw-hr. Hydroelectric power will play an increasingly important part as the steel industry of the West develops to meet the demands of this territory for a local product.

WHILE the various operations of a modern steel mill are somewhat complicated, electric power and lighting have contributed largely to simplifying its operation. The term "mill" in this sense is to be understood as applying to the entire plant. In reality a steel mill is composed of different units each designed to fulfill certain necessary functions in the manufacture of the steel products. In all of its operations the use of electric power is indispensable.

The South San Francisco mill of the Pacific Coast Steel Company is a typical example. Open hearth steel is manufactured in the open hearth department from scrap and pig iron and is cast into ingots for rolling on the 24-in. and 18-in. mills. This rolling shapes the ingots into a variety of finished sections, such as angels, bars, rods and bands or into billets for final rolling in the smaller mills of the plant. These finished sections then either are supplied to the trade, as such, or are fabricated into structures of various kinds by the tower department. This one plant with a capacity of 180,000 tons of steel per year, has a connected motor load of 8,200 hp. and a lighting and heating load of 150 kw. The three plants of the company, including the one at South San Francisco, have a total motor load of well over 20,000 hp. The 1924 total consumption at the South San Francisco plant was 8,910,000 kw-hr., with a maximum half-hour average demand of 3,840 kw. Power is supplied from the South San Francisco substation in three circuits, through three 2,250-kva., 60-kv./2.3-kv. transformers connected star-delta. The load is very completely metered because of its fluctuations, indicating and integrating watthour meters, maximum demand meters, voltmeters and ammeters being used. Circuits No. 1 and No. 2 are both wired in duplicate from the substation as a protection against



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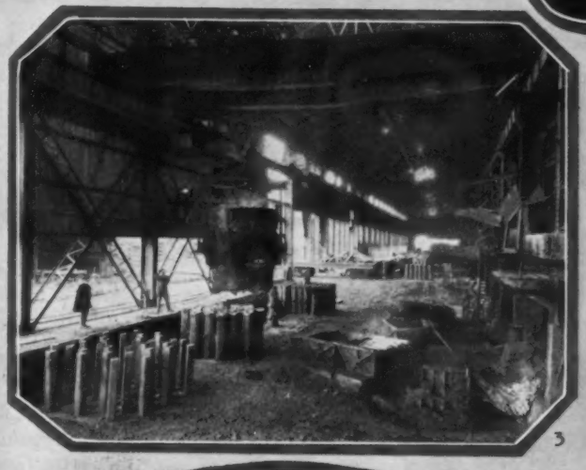

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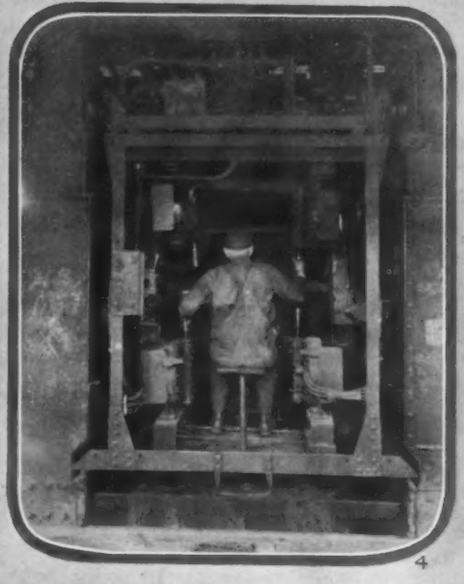

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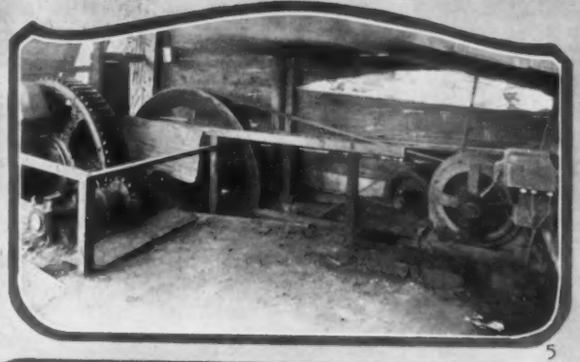

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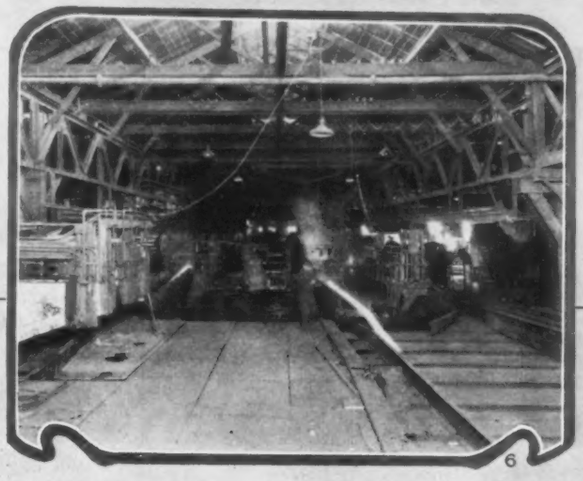

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AT the South San Francisco plant of the Pacific Coast Steel Company, electricity plays an important part in the manufacture and fabrication of steel. Photo No. 1 shows the substation which serves the 8,200-hp. connected load of the mill. No. 2 is a view of the ingot storage yard with an electro-magnet equipped crane stacking ingots. No. 3 shows the pit of the open hearth furnace building with a 75-ton crane carrying the pouring ladle. No. 4 shows the operator seated in the cab of the electrically driven charging machine. Four motors with an intricate control system make this machine almost human. No. 5 shows a 35-hp. motor driving the alligator shears which cut rails and heavy pieces of scrap into required length for the furnaces. No. 6 shows the 22-in. and 18-in. rolling mills in action with ingots on two of the electrically driven tables. At the right is some of the operating mechanism.

line trouble between substation and the load. They run out on the same pole line. Circuit No. 3, feeding the tower plant and pumping station, is a single circuit coming out on a separate line.

On the Pacific Coast, open hearth steel is made from scrap, such as discarded structurel steel, railroad rails, car wheels, oil well cable, castings, machine shop turnings and punchings and pig iron. This requires extensive storage space for the scrap supply at each mill. The main scrap yard at South San Francisco, immediately in front of the open hearth furnace buildings, contains 35,000 tons of scrap, on the average, and occupies an area 650 ft. long by 80 ft. wide.

Scrap Yard Equipment

A standard gage spur track runs the full length of the yard so that scrap may be unloaded at any point. A narrow gage line also runs through the yard and into the open hearth building and is used to convey the scrap to the furnaces. Two overhead traveling cranes, each equipped with a lifting magnet, are used in unloading the cars of scrap and also for loading the small charging boxes with material for the furnaces. These charging boxes are conveyed on small flat cars on the narrow gage track. Manual handling of the scrap is used only to a limited extent and then chiefly for cleaning up odds and ends.

Reserve supplies of scrap are maintained in several smaller scrap yards on the property. The material in these yards is handled by a locomotive crane equipped with a lifting magnet.

The length of material to be charged into the furnaces is limited to approximately 5 ft. Longer pieces such as rails are cut at the mill by cutters known as alligator shears, these shears being individually driven by electric motors. The movement of the shears is continuous, and scrap is fed into position with the upstroke of the cutting head. The cutting head of the rail shears, weighing 10 tons, makes 16 strokes per minute while the smaller shears operate at higher speeds.

Use also is made of the electric motors in preparing other materials for the charging operation, such as crushing the dolomite, fluorspar and corrective ores.

The Electric Charging Machine

Probably the most ingenious of all the electric equipment in the mill is the charging machine itself, which charges the loads of scrap and other materials into the furnaces. Control of the four motors on the machine is through individual manually operated controllers, and when charging, the operator has his hands full. One motor drives the machine along its tracks; the other three motors are geared to the loading plunger for its three movements, forward and back, up and down and revolving. This plunger engages a loaded charging box, raises it and carries it forward into the furnace, dumps it and returns it to the car and then pushes the train of cars along to place the next charging box in position in front of the furnace door.

Electric power is used entirely in handling material on the other side of the furnaces, one 75-ton, one 60-ton and two smaller overhead cranes being in constant service over the pit. Ingot molds are set in place, loaded and empty ladles are moved, molds are stripped from the ingots, and even the flat cars coming into the pit are pulled along by the cranes.

Ingot-Handling Process

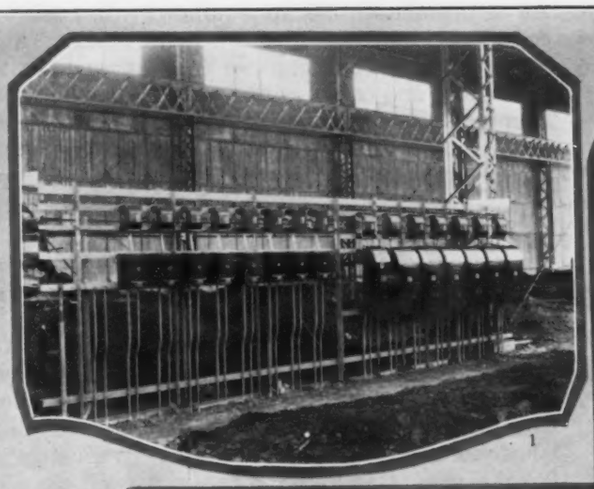
From the open hearth building the ingots are moved into the ingot storage yard. A crane equipped with a lifting magnet is used to raise the ingots from the cars and carry them to designated spots for stacking, according to their analyses and respective heat numbers, or to the charging end of the reheating furnace. Here the ingots are charged into the furnace by an electrically driven pusher, and move along on water-cooled skid pipes in their passage through the furnace. The water for these pipes is supplied from the main pumping plant, under pressure, and must come in a steady stream. If the water should be shut off even for an instant, the pipes would be burnt out and the mill operation forced to suspend until replacements could be made. In the pumping plant three centrifugal pumps, driven by individual motors, are depended on for the bulk of the water supply of the whole mill. After slowly moving through the reheating furnace, the ingots emerge from the working end of the furnace and are carried on a roller conveyor into the rolling mill.

Here the heavy work of electric power in the mill starts. The ingots first pass through the 24-in. mill to be reduced in size to billets. They are then passed through the 18-in. mill for rolling into heavy sections, or into the billet shears for cutting and rolling in the smaller rolls. The stands of rolls of the 22-in. and 18-in. mills are in alignment, but each is driven by its own motor through gears. The 24-in. mill motor is an 800-hp., 195-r.p.m. induction motor and that for the 18-in. mill an 1,800-hp., 593-r.p.m. motor, both operating at 2,300 volts.

Four electrically operated carriages or tables handle the steel as it moves through the rolls. These carriages, approximately 25 ft. in length, have complete electric motor and control equipment. They move along tracks parallel to the stands, tilt up and down to receive or eject the steel, and move the steel back and forth on rolls. Each carriage is equipped with a separate motor for each function and is run by an operator seated in a cab on the carriage. Control of the motors is through separate controllers.

Motor Equipment of Smaller Mills

The loads of the smaller stands of rolls are approximately equal to that of the 24-in. mill, but the elaborate handling equipment is not necessary. Eight hundred hp., 2,300-volt motors of 184½ r.p.m. and 272 r.p.m., respectively, drive the stands of rolls of the 10-in. and 9-in. mills. As in the larger mills, roller conveyors feed the steel to and away from the rolls, and each of these is electrically driven. Separate reheating furnaces are used to reheat the billets for the smaller mills, and they also are charged by electrically driven pushers.



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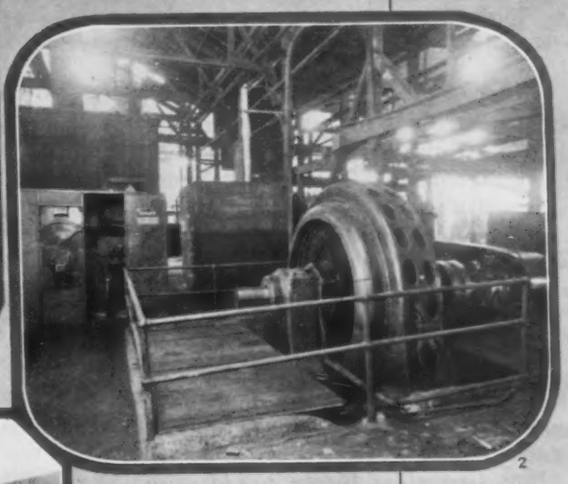

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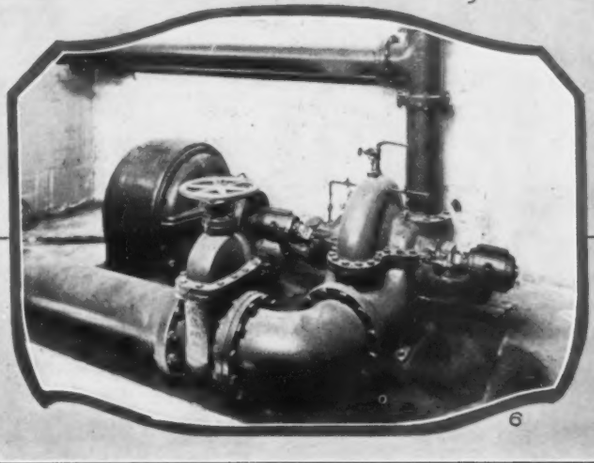

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MOTORS of all sizes are used in the South San Francisco plant of the Pacific Coast Steel Company. No. 1 shows an auxiliary switch and contactor panel in the tower department with protecting housing removed. Each motor has push-button control. No. 2 is a view of the 800-hp. motor driving the 9-in. mill. The control equipment is shown at the left. No. 3 is a view of the storage yard with the electrically driven gantry crane. No. 4 shows the compressor room with a 225-hp. induction motor in the foreground driving one compressor and a 265-hp. synchronous motor direct-connected to a compressor in the background. No. 5 is a typical installation of individual motor drive and push button control in the tower shop. The machine is a plate shear. No. 6 shows a 150-hp. motor direct-connected to a centrifugal pump in the main pumping building.

From the rolls, the finished sections go to "hot beds," where they are cooled, cut to length and straightened, ready for warehousing. All of the conveying, cutting and straightening is done by electric power.

Alterations to Increase Mill Capacity

Extensive alterations in the motor and control equipment of the present 10-in. mill are under way and when completed will greatly increase the tonnage capacity and the range of rolled sizes. This mill will be a combination "Belgian mill," consisting of a 16-in. roughing mill and a 10-in. finish mill, driven by separate motors. The roughing mill is for breaking down the ingots into billets of workable size for the 10-in. mill and is driven by a 750-hp. slip-ring induction motor with full magnetic control and current limit acceleration. The 10-in. finishing mill motor is a double-speed range motor with full Scherbius control and is direct-connected to the main shaft of the mill. It is a constant torque motor developing 1,500 hp. at the top speed of 320 r.p.m. and 900 hp. at the minimum speed of 200 r.p.m. The head roller has complete control of the motor through push buttons located at his station. This installation is the first of its kind in Western steel mills and is a decided improvement over the older types.

Extensive use is made of overhead cranes in each of the rolling mill buildings. All handling of rolled sections after they are prepared for warehousing is by this means, as well as are the lifting and conveying of parts in repair work. Direct current for all of the cranes and for the direct-current motors in the conveying tables and roller conveyors is supplied by two motor-generator sets. A 300-hp. and a 225-hp. motor, respectively, drive a 200-kw. and a 150-kw., 250-volt generator, the generators being operated in parallel.

The Tower Shop

The tower shop, in which all of the fabricating and galvanizing is done, is located some distance away from the rolling mill group of buildings. Stock for the tower shop is moved over a standard gage railway and enters the tower building at the upper end. From this point until it is on the cars, for shipment, the material is handled entirely by electric power. The building and its equipment, both mechanical and electrical, constitute a fine example of a modern industrial plant. Overhead cranes run the full length of the main building, 500 ft. long, and the galvanizing shop wing, 175 ft. long. One of the main cranes has a monorail suspended from it so that material may be passed directly into the galvanizing wing without duplication of handling.

As stated above, the tower plant is supplied with current at 2,300 volts through circuit No. 3 from the main substation. The stepdown transformers, main switchboard and motor-generator set for crane service are isolated in a lean-to on the south side of the building. Three 220-volt a.c. power circuits, the 240-volt d.c. power circuit, and a 110-volt lighting circuit lead out of this room. Two of the a.c. power circuits run to separate switch and contactor panels and supply power for the machines in the main building. All of these machines are equipped with push-button control, being driven by individual motors. The auxiliary panel boards, equipped with entrance switches, contactors and compensators, are housed in separate lean-tos outside of the main building. They are thus out of the way of operations and easy of access front and rear for adjustments or replacements.

The various shears, punches and similar machines are arranged so that the material moves along to the galvanizing wing as the fabrication progresses. The monorail crane carries it to the pickling vats and from there to the galvanizing kettles. When galvanizing is completed the material is transferred to the 160-ft. gantry crane which operates the full length of the tower yard. This crane spots the finished steel for storage or loads it directly onto freight cars standing on the standard gage spur for shipment to destination.

Power Requirements

The numerous service operations throughout the plant, which are incidental to the main operation of manufacturing, rolling and fabricating the steel, require a substantial amount of power. Among these may be mentioned the following:

Pumping station, with total motor load of 260 hp., supplying water to the rolling mills, shops and other buildings.

Compressor room, total motor load 499 hp., supplying compressed air to the machine shops, furnaces and repair shops.

Hydraulic pump, 25 hp. motor, supplying water under pressure to raise the furnace doors. The intense heat prevents the use of any other form of lifting.

The machine and pattern shops, roll lathe shop, locomotive repair shop and testing laboratories, with a combined motor load of 175 hp., exclusive of overhead cranes.

The accompanying table shows in detail the rating and duty of each of the motors which make up the total load of approximately 8,200 hp.

CONNECTED MOTOR LOAD OF ENTIRE MILL

Department	Hp.	Voltage	Duty
SCRAP YARD	35	220—a.c.	Rail shears
	2-10	220—a.c.	Scrap shears
No. 1 crane	21	240—d.c.	Bridge
	30	240—d.c.	Hoist
	10	240—d.c.	Trolley
No. 2 Crane	30	240—d.c.	Bridge
	30	240—d.c.	Hoist
	10	240—d.c.	Trolley
Ore bins	35	220—a.c.	Crusher
	10	220—a.c.	Crusher
	2-5	220—a.c.	Elevator
	3	220—a.c.	Elevator
OPEN HEARTH	30	240—d.c.	Bridge
No. 1 Charging machine	20	240—d.c.	Hoist
	20	240—d.c.	Trolley
	5	240—d.c.	Revolving
No. 2 Charging machine	30	240—d.c.	Bridge
	20	240—d.c.	Hoist
	20	240—d.c.	Trolley
	5	240—d.c.	Revolving
No. 6 Furnace	7½	220—a.c.	Reversing valve
75-ton ladle crane	50	240—d.c.	Bridge
	30	240—d.c.	Main hoist
	18	240—d.c.	Auxiliary hoist
	18	240—d.c.	Main trolley
	10	240—d.c.	Auxiliary trolley

Department	Hp.	Voltage	Duty
60-ton ladle crane	30	240—d.c.	Bridge
	40	240—d.c.	Main hoist
	30	240—d.c.	Auxiliary hoist
	15	240—d.c.	Trolley
No. 1 Stripping crane	25	240—d.c.	Bridge
	30	240—d.c.	Hoist
	7½	240—d.c.	Trolley
No. 2 Stripping crane	14	240—d.c.	Bridge
	50	240—d.c.	Hoist
	7½	240—d.c.	Trolley
	7½	220—a.c.	Ingot stripper
INGOT YARD	30	240—d.c.	Bridge
7½-ton crane	30	240—d.c.	Hoist
	7½	240—d.c.	Trolley
ROLLING MILL	800	2,300—a.c.	Main drive
24-in. mill	50	220—a.c.	Hot shears
No. 1 Table	3-30	240—d.c.	Table operation
	5	240—d.c.	Manipulator
No. 2 Table	3-30	240—d.c.	Table operation
Reheating furnace	30	240—d.c.	Roller conveyor
	2-21	240—d.c.	Pusher-in
	18	240—d.c.	Pusher-out
	14	240—d.c.	Pusher-out
18-in. Mill	1,800	2,300—a.c.	Main drive
	2-10	220—a.c.	Tables
	2-25	220—a.c.	Auxiliary roller
	35	220—a.c.	Crop end saw
	2-10	220—a.c.	Transfer chair
	10	220—a.c.	Hot bed transfer
	10	220—a.c.	Finish shears
	50	220—a.c.	Cut-off saw
	100	2,300—a.c.	Straightener
	15	220—a.c.	Finish shears
No. 1 Table	3-30	240—d.c.	Table operation
No. 2 Table	3-30	240—d.c.	Table operation
Conveyors	2-30	240—d.c.	Roller line to hot bed
	30	240—d.c.	Roller lines
	30	240—d.c.	Roller from hot bed
	7½	240—d.c.	Roller to shears
	25	240—d.c.	Transfer
	2-7½	240—d.c.	Roller from shears
	30	240—d.c.	Round straightener
	30	240—d.c.	Second section conveyor
10-in.Mill	800	2,300—a.c.	Main drive
	10	220—a.c.	Conveyor
	5	220—a.c.	Conveyor
	15	220—a.c.	Conveyor
	3-10	220—a.c.	Roller conveyor
	10	220—a.c.	Finish shear
	5	220—a.c.	Roller line
	21	240—d.c.	Pusher in
	30	240—d.c.	Conveyor
9-in. Mill	800	2,300—a.c.	Main drive
	2-10	220—a.c.	Roller lines
MISC. SHOPS	3-5	220—a.c.	Roller lines
	2-5	220—a.c.	Shears
	2-5	220—a.c.	Conveyor
	2-18	240—d.c.	Conveyor
	14	240—d.c.	Pusher
Compressor room	264*	2,300—a.c.	Compressor
	10	220—a.c.	Exciter for synchronous motor
	225	2,300—a.c.	Compressor
Hydraulic pump	25	220—a.c.	Pump
	18	240—d.c.	Pump
Machine shop	25	220—a.c.	Line shaft
	10	220—a.c.	Line shaft
	10	220—a.c.	Planer
	5	220—a.c.	Blower
	11	220—a.c.	Emery wheel
Crane	7½	220—a.c.	Bridge
	10	220—a.c.	Hoist
	3	220—a.c.	Trolley
Roll lathe shop	2-15	220—a.c.	Roll lathes
	1-10	220—a.c.	Roll lathes
	1-18	240—d.c.	Roll lathes
Testing laboratory	7½	220—a.c.	Riehle testing machine
Pattern shop	3-10	220—a.c.	Line shaft
Locomotive repair shop	20	220—a.c.	Air compressor
	5	220—a.c.	Line shaft
	3	220—a.c.	Trip hammer
	1	220—a.c.	Emery wheel
Steel foundry	35	220—a.c.	Grinding pan
18-in. Shipping	30	240—d.c.	Bridge
Dept. 20-ton crane	30	240—d.c.	Hoist
	7½	240—d.c.	Trolley
Mill crane	30	240—d.c.	Bridge
	30	240—d.c.	Hoist
	15	240—d.c.	Trolley
Billet storage	2-14	240—d.c.	Bridge
No. 1 & No. 2 cranes	2-14	240—d.c.	Hoist
	2-5	240—d.c.	Trolley
Mill repair crane	25	240—d.c.	Bridge
	25	240—d.c.	Hoist
	5	240—d.c.	Trolley
10-in. Mill shipping	2-7½	240—d.c.	Bridge
dept. No. 1-No. 2 crns	2-14	240—d.c.	Hoist
	2-5	240—d.c.	Trolley
No. 1-No. 2 Monorail	2-14	240—d.c.	Hoist
	2-5	240—d.c.	Trolley
	35	220—a.c.	Straightener
	25	220—a.c.	Straightener
	2-5	220—a.c.	Shears
Pump house	150	2,300—a.c.	Pump
	75	2,300—a.c.	Pump
	35	220—a.c.	Pump
Chemical laboratory	2-1	220—a.c.	Grinding
	1-½	220—a.c.	Line shaft
	2-1-kw.	Heating plates	
TOWER DEPT.	3-10	220—a.c.	Shears
	2-5	220—a.c.	Shears
	1-3	220—a.c.	Shears
	9-10	220—a.c.	Punches
	3-5	220—a.c.	Punches
	3-5	220—a.c.	Punches
	1-10	220—a.c.	Bolt room
	1-25	220—a.c.	Bulldozer
	1-10	220—a.c.	Bulldozer
	1-20	220—a.c.	Air compressor
	1-3	220—a.c.	Grinder
	1-1	220—a.c.	Blower
	1-10	220—a.c.	Dryer
	1-½	220—a.c.	Door lifter
	1-5	220—a.c.	Shaker table
	1-5	220—a.c.	Oil pump

For the d.c. cranes in the tower department, a 65-hp. motor is direct-connected to a 50-kw., 240-volt generator. Following are the d.c. motors installed. Because of the diversity of the load it is possible to serve them all with this one motor-generator set:

Shop cranes	98 hp. total connected load
Gantry crane	49 hp. total connected load
Galvanizing crane	19 hp. total connected load
Monorail crane	20 hp. total connected load

The tower department also has a connected lighting load of 23 kw. and a heating load of 15 kw.

* Synchronous

Manual Aids District Office Employees in Relations with Consumers

AS an aid to the employees of the Southern California Edison Company in their relations with the public a small eight-page pamphlet is issued to district offices. The purpose of the manual is not only to lay down some cardinal principles in conduct but to emphasize the fact that meritorious service is the basis of promotion.

The complete text of the manual follows:

To the Employees of the Commercial Department:

The motto of the Southern California Edison Company is "Good Service, Square Dealing and Courteous Treatment." The sure road to advancement with the company lies in the constant, thoughtful practice of those principles. The rewards for merit in the form of advance in salary or position can be achieved in almost exact proportion to the effort put into your work in demonstrating to our consumers, whose convenience and satisfaction are our chief concern, that we furnish the best possible service and that we deal with them squarely and courteously. There is no room or future in the company for anyone who does not live up to these principles in which we give practical expression in our Department of Greater Service.

This little pamphlet is intended as a guide to the employee in that it gives him just a few of the high lights that may assist him in his daily work. A careful study of the book entitled, "Winning the Public," written by our vice-president in charge of business development and public relations, Mr. S. M. Kennedy, is earnestly recommended as a complete guide to the ambitious worker who has cast his lot with the company. We believe you have joined the company not merely to hold your present job at your present salary, but in the

hope that you may advance in position and obtain the rewards that go with merit. There is plenty of room for advancement i nthis great company for men and women who can demonstrate their ability to do their work "just a little bit better."

You may be the only representative of the company with whom many people come in contact. We are relying on you to uphold the company's dignity and principles.

Very sincerely,
W. L. FROST,
General Commercial Manager.

THE TELEPHONE

The company's business is largely handled over the telephone so this point of contact is most important. In order to avoid the annoyance of having to repeat, speak directly and distinctly into the transmitter. Speak slowly and clearly. Be really courteous. Avoid harsh tones and abrupt language. If delays must occur, say "One moment, please." If information must be looked up, ask for the customer's number and call back. If a person called is out, ask if someone else will do. If not, get the number, ask if you may deliver a message and say you will be glad to have the party wanted call as soon as he returns.

In answering calls do not say "Hello," say "Edison Company." If the call must then be transferred to some one else, the answering party should do so by stating his or her name, not by saying "Hello." Telephone calls should be answered promptly.

No company employee is ever too busy to give consumers the considerate, careful, attentive and courteous treatment to which they are entitled. Each employee should regularly ask himself, "Am I making the most of the opportunities offered so that the public, myself and my company may reap the full benefit?"

METER READER'S GUIDE

A good meter reader is courteous and accurate. The courteous reader:

Announces his approach by calling "Edison meter reader."
Greets the consumer cordially and respectfully.
Addresses a consumer by name, if known—otherwise as "Madam" or "Sir."
Speaks cheerfully but not boisterously to children.
Does not jump fences or cut across lawns.
Does not punch holes in screen doors.
Does not use skeleton keys.
Does not smoke on duty.
Does not leave doors or gates open.
Gives needed information; never argues.
Refers all requests for special information to his chief.
Instructs consumer how to read meter when requested.
Is neat in appearance, kindly in manner and businesslike in behavior.
Does not tell the customer the amount of his bill, because of possibility of making a mistake, but if desired, does give him the meter reading.
Removes his hat when entering a residence or when talking with a lady.

The accurate reader:

Takes times to be sure.
Is particularly careful when reading is difficult.
Does not guess through screen doors and in dark corners.
Reports all changes of names, complaints, jumpers, broken seals, meters exposed to weather, bad wiring and special conditions such as "bad dogs," "key next door," "work during day," etc.
Keeps record book neat and up to date.
Checks constants and numbers with meter book.
Marks "OK" after an unusually high reading to indicate to the office that he has rechecked the reading.

The courteous and accurate reader is pleasing to the consumer, appreciated by the management and respected by all.

TIPS FOR ON-AND-OFF MEN

Hundreds of people form their opinion of the company from their contact with on-and-off men. Their services are required at a time when the consumer is often upset with the many annoyances of moving, and the appearance of an Edison man who does his work efficiently, quietly and **promptly** frequently suppies the only cheerful moment of the day.

On-and-off men will find their work will be easier and their successes more marked by observing the following suggestions:

1. Do not fail to complete all "off and on" orders on the day or hour required.
2. When completing an "off" order be sure to open the switch and remove **both fuses** in the entrance switch.
3. Do not leave fuses, good or bad, on the meter. This practice invites trouble from the fact that tenants will fuse themselves up and fail to notify the company of the fact.
4. Do not use pass key to enter a house for "off and on" orders unless permission has been given.
5. Always obtain forwarding address when closing bill is not paid at the time of completing "off" order.
6. Do not use heavier fuses than 15 amperes for lighting service in the entrance switch and 10 amperes in the branch blocks.
7. Be sure your meter readings are correct. The accuracy of the company's accounts and reputation for honesty depend on your readings. Mark dials on your order.
8. Always complete your "off" orders literally regardless of anyone's requesting as a favor that you leave the current on. Inform the customer that arrangements for service can only be made at the office of the company. Give them the office and phone number and courteously request that they apply there.
9. Familiarize yourself with the rate per kilowatt hour and minimum charges for both city and county service.
10. Look for jumpers and report every unusual or unsafe condition.
11. Answer all questions courteously.
12. If the customer is paying a closing bill, thank him and tell him you hope our service has been satisfactory and that you trust we will have the pleasure of serving him again at some future time.
13. Treat everyone with equal courtesy. The party who pays us one dollar a month is entitled to as much consideration from us as the man who pays hundreds of dollars.

TROUBLEMEN

1. You should be the customer's best friend for it is to you he comes in the hour of trouble.
2. Promptness with you is not only a virtue; it is a necessity.
3. Remember that when a fuse blows out there is a reason; find it out and inform the customer. Tell him that a fuse is for his protection. Tell him the danger of overloading a circuit. Suggest a new circuit wired for "convenience outlets" in baseboards, and if the consumer is inclined to listen, tell him the trouble the company takes to give good service and prevent trouble of all kinds.
4. Look for trouble. Do not always wait until it comes. For instance: If you see a limb of a tree that is likely to short wires, make out a trouble order to the district superintendent to trim it off if you cannot do it.
5. If technical advice seems necessary and you are not in a position to give full information, notify the district manager promptly.

SUGGESTIONS FOR BOOKKEEPERS

A good bookkeeper will not sacrifice accuracy for speed because:

Errors in billing antagonize the consumer.
Errors cause work for others in making corrections and adjustments.
Errors cause delays in securing balances.
Errors show in the traveling auditor's report, and reflect unfavorably on the district.
Lack of complete information on the bill annoys the consumer and delays the collector.
Corrected bills make consumers suspicious.
Pro-rated bills, unless they are explained, create an unfavorable impression in the consumer's mind.
Carelessly made, inaccurate bills that cannot readily be understood by customers can but result in retarding the bookkeeper's advancement.
The bookkeeper who considers each bill a message from the Edison company to one of its customers, has the same opportunity to make friends for the company that is given those employees who meet the consumer face to face.

HINTS FOR CASHIERS

The cashier represents the company when the consumer is parting from his money. The situation calls for a pleasant manner and a full knowledge of the transaction leading to this payment.

The successful cashier:

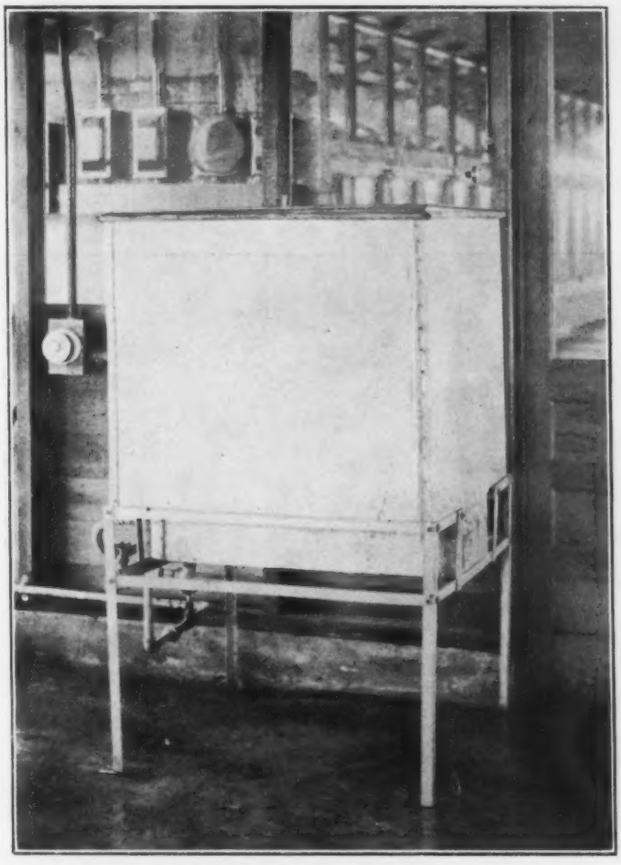
Is tactful.
Is neat and businesslike.
Calls the consumer by name.
Gives the consumer his entire attention.
Makes change rapidly and accurately.
Always thanks the consumer for the payment and adds a smile for good-will.
Should never say "Hello" when answering the phone—say "Edison Company."

Every cashier should:
Know the rates.
Understand the bookkeeping system.
Be familiar with lamps and appliances.
Ask questions when in doubt and thus avoid giving wrong information.
Look up accounts before cashing deposits.
Take the position that the customer is always right until we can prove to his entire satisfaction that he is in error.
Prompt, courteous, tactful methods at the counter are the mark of a good cashier. If a second customer comes in before the first has finished his business, the cashier should recognize the presence of the second customer by a smile or bow. If a third customer comes in, do not keep him waiting in line, but call for one of your assistants to come forward.
We are pleased and you are to be complimented when people say, "It is a pleasure to do business in an Edison office."

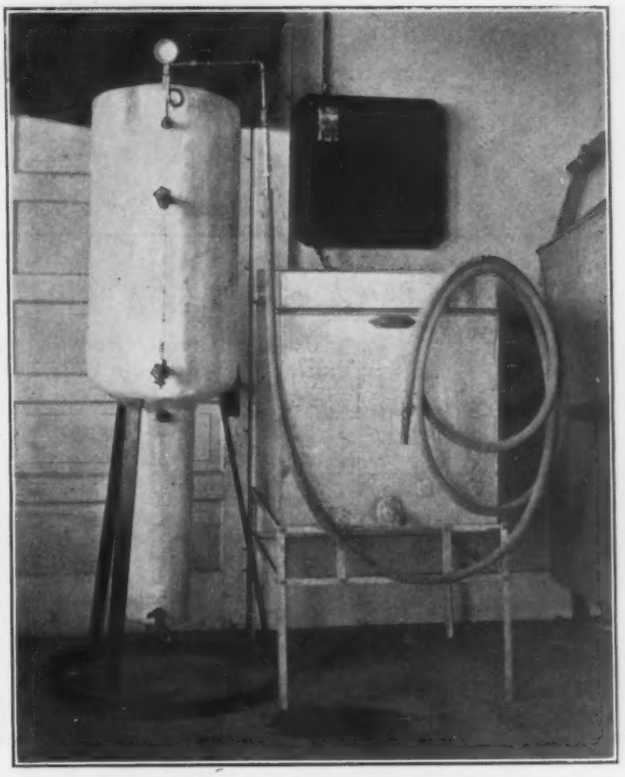
An Electric Sterilizer for the Average-Sized Dairy

AN electric sterilizer which will adequately meet the requirements of 98 per cent of the average dairies has recently been developed by Fred B. Fair of San Joaquin, Calif. This new sterilizer is the outcome of a model brought forth about two years ago and differs from the earlier model in that live steam under pressure in addition to ample hot water is provided for cleaning and sterilizing.

The sterilizer consists of a 30-gal. boiler placed over a heating chamber containing a 5-kw. hairpin heating element. A sheet-metal sterilizing chamber, large enough to hold four 10-gal. cans, is placed adjacent to the boiler. A 50-gal. tank with a 10-kw. element also is being made to meet the requirements of larger dairies.



Early model of sterilizer in which four 10-gal. cans can be sterilized at one time by means of hot water.



In the improved model steam under pressure up to 75 lb. may be used for sterilizing purposes.

Cold water is run into the boiler to levels shown on a water gage, no injector being used to force water into the boiler. The dairyman starts his cleaning operations by filling the boiler and turning an electric switch. The heater soon raises the temperature of the water to the desired heat. Washing operations usually lower the water level to approximately 7½ gal.

Live steam may be generated at any desired pressure up to 75 lb., at which point a safety valve is set to operate. An automatic water level gage and a pressure gage to cut out the current are additional safety devices designed to make the sterilizer practically fool-proof. When cans and parts of separators and milking machines have been washed, they are sterilized by live steam in the sterilizing tank.

The advantage of the electric dairy sterilizer over oil and wood-heated sterilizers are cleanliness and convenience. There are no fumes, soot or ashes to contaminate the milk such as result from the use of oil or wood-burning plants. The electric sterilizing plant is compact, occupying a floor space of 3 x 5 ft., and it can be set up anywhere in the milk-house. The original cost of the electric machine is about the same as that of an oil burner, while the operating cost is very little more. A recent survey showed a cost of 12 cents per day for power in each of six dairies using 5-kw. electric sterilizers of the early type. The steam pressure type has not been in operation a sufficient length of time to determine the costs for power, but the cost is estimated to be about the same as for generating steam by oil-burning.

CENTRAL STATION CONSTRUCTION OPERATION AND MAINTENANCE

Modern Pole-Treating Plant Fills Entire Need

Economical Treatment of All Poles Used on System Effected at New Plant of San Joaquin Corporation.

By D. P. MASON, Manager Supplies Division, San Joaquin Light & Power Corporation, Fresno, Calif.

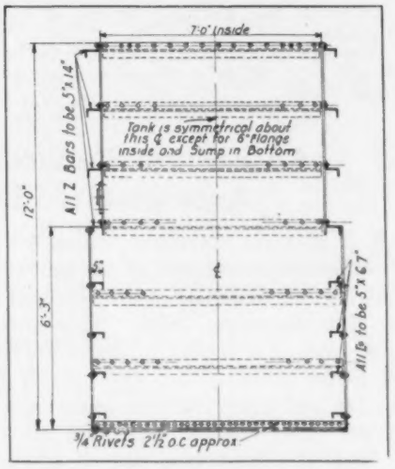
Two carloads of poles per day can be treated at the pole-treating plant of the San Joaquin Light & Power Corporation at Fresno, Calif. The design and layout of the plant are the result of several years experience with the company's former less modern equipment and an extensive study of many other treating plants on the Pacific Coast. Its location is at the center of the company's present pole-storage space where it is readily accessible to rail, truck and handling facilities.

The distinctive feature of the tanks is in the design and location of the heating units. Offsets 5 in. deep and 6 ft. 3 in. high extend the full length of each tank. Steam headers are used for heating the creosote and are mounted in these spaces along the sides of the tanks. Poles are prevented from striking and damaging the headers by ½-in. by 2-in. bars on 4-in. centers running vertically and bolted to the stiffener channels. This construction leaves no projections for poles to become hung up while being lowered into the tank. The highest steam pipe is 6 in. below the lowest level of creosote used in treating.

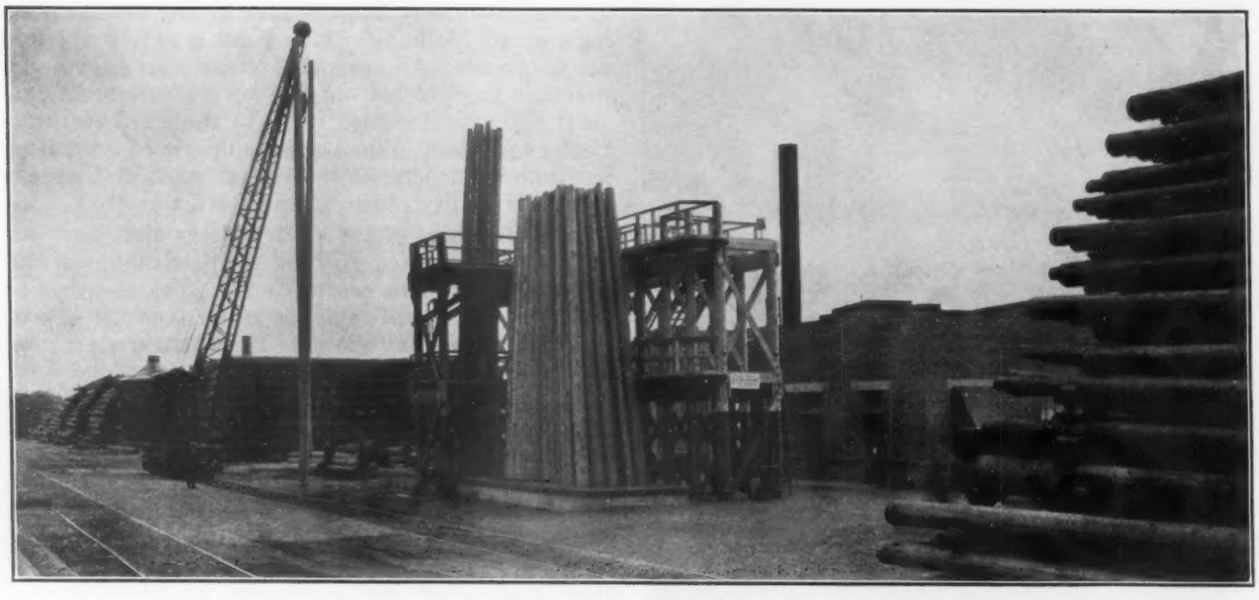
At first thought it would seem that the bottom of the tank would be the logical place to install the heating units. However, by mounting them in the offsets in the sides of the tank 35 per cent more heating surface is made available. Further, the debris which rapidly accumulates from the poles in the bottom of such a tank greatly decreases the efficiency of heating units located in the bottom. Damage is more likely to occur and is more difficult to guard against when headers are placed down where poles must rest upon them or their guards.

Steam headers are used instead of coils because headers are more easily handled and because the condensate will drain more rapidly from a header than from coils. The headers are constructed of standard black pipe, and all joints are welded and tested to withstand a working pressure of 125 lb. Eighteen lengths of 1½-in. pipe welded into 3-in. pipe-headers constitutes each heating unit.

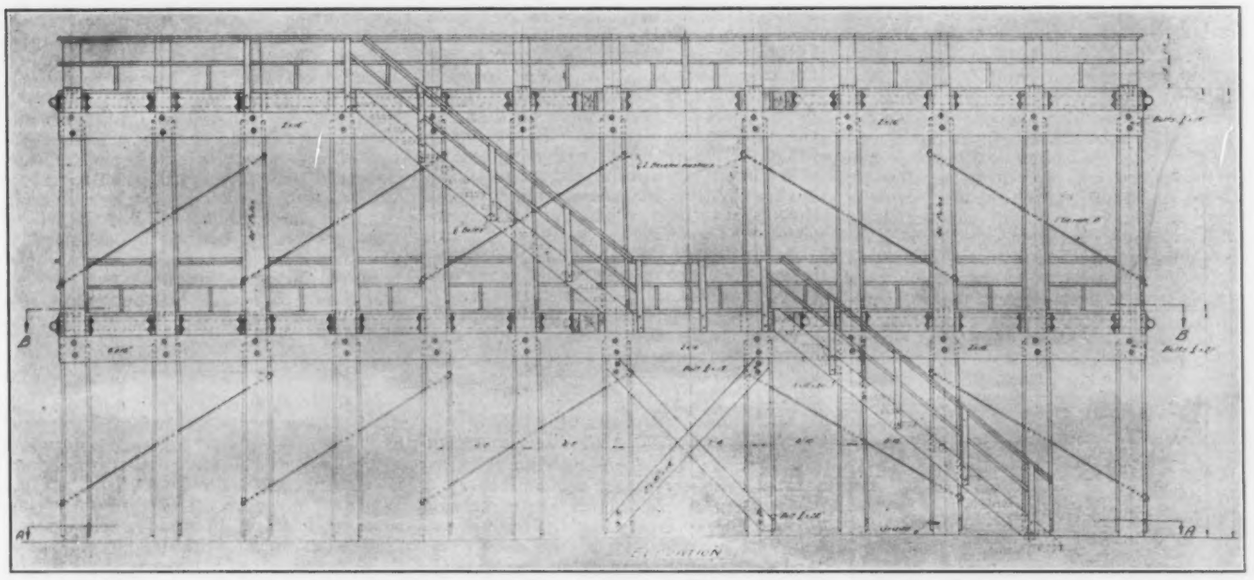
The tanks are constructed of ⅜-in. steel plate with 5-in. channel and Z-bar stiffeners. The larger one is 7x24x12 ft. and the smaller 7x15x12 ft. Each tank sets in its own reinforced concrete pit, and the two are separated by a pump pit. Oiled sand is used under the tanks instead of cement grout because the sand conforms to the outline of the tank bottom nearly as well as grout and prevents the bottom from rusting. The sand also serves as a cushion should poles accidentally be dropped into the tank. Rails, bolted together in sections to facilitate their removal when cleaning the tank, are laid across the bottom of the tank on the inside to form a rest for the pole butts and to prevent them from slipping. The tanks


7'-0" Inside
All Z Bars to be 5"x 1/4"
Tank is symmetrical about this ℄ except for 6" flange inside and Sump in Bottom
12'-0"
6'-3"
All B to be 5"x 6.7"
3/4 Rivets 2 1/2 o.c. approx

Cross section of the pole-treating tank showing location of Z-bars and channels used for stiffeners. The offset at either side is to accommodate the steam headers for heating the creosote. A 24-in. sump, to which is connected the suction line of the pump, makes possible the complete draining of the tank.



Preparing to drop a couple of 50-ft. poles into the creosoting vats. The double "L" shape of the structure greatly facilitates loading and unloading the tanks, as they may thus be approached from almost any angle. Two carloads of poles may be treated here at one time. The boiler house appears immediately in the rear of the treating-tank structure.



Elevation of the treating-plant superstructure showing the m ajor dimensions and the method and location of cross bracing.

are entirely self-supporting and do not bear against the pit walls. This enables easy removal of the tanks for repair purposes.

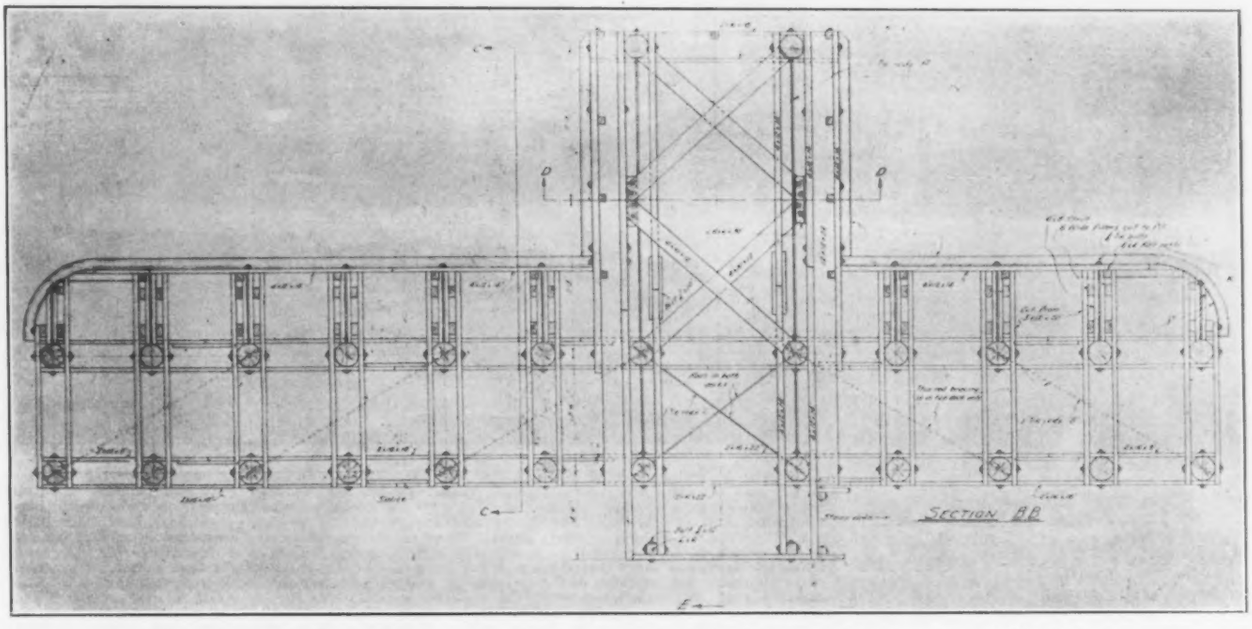
Duplicate pumps for handling creosote are located in the central pit. One of these pumps is a motor-driven centrifugal and the other a duplex steam pump. A motor-operated vertical sump pump controlled automatically by a float switch prevents possible flooding of the pump pit. Sumps in each of the tank pits drain into the sump in the central pit.

Temperature of the creosote in each tank is recorded by Bristol recording thermometers mounted in the pump pit. However, during normal operation it is not necessary to go down into the pit because all valve stems are extended through to handwheels above ground level. The starting mechanism for the pumps is also available from ground level. Each valve is plainly labeled with a metal tag telling just what its purpose is.

The superstructure forms a letter "L" around each treating tank, the bases of the two "Ls" being common. This construction was adopted rather than the more common "U" or "J" shapes because of the ease with which poles may be handled with a supporting structure of this shape. The comparative ease of bracing the other types is more than offset by the disadvantage of operating such a plant where the side nearest the track or crane interferes with the loading and emptying of the tanks by the cranes. Twenty-six cedar poles 40 ft. long of specially picked straight-grained stock, 16,000 ft. of No. 1 select Oregon pine, 33 one-inch steel tie rods, and 800 bolts with C. I. washers went into this structure. The poles are butt-treated for a length of 10 ft. Double decks substantially railed facilitate the handling of poles of various lengths.

From 80 to 140 poles can be treated at one time in the larger tank, and from 45 to 85 in the small depending upon the size of the poles. About three hours is required to load both tanks from stock piles, and about the same to empty the tanks and load the poles on cars ready for shipment.

Apparently the best penetration, which is from 5/16 to 3/8 in., is obtained by bringing the creosote up to a temperature of 215 degrees F. during a period of four hours. Steam is then shut off and the whole mass allowed to cool off until the next morning. However, it is possible to turn out two loadings in 24 hours with nearly the same penetration by increasing the boiling period and then turning in cold creosote



Section plan view of the supporting structure for the treating plant showing some of the interesting design features.

while the hot is being pumped out. This latter operation hastens the cooling.

The boiler house is located just back of the treating vats and is a 35x57-ft. building which houses an office, a change room and a shop as well as the boiler and appurtanences. A horizontal tubular oil-fired boiler designed for 125 lb. pressure and operating at 100 lb. supplies steam to the headers in the creosote vats. A steam connection is also extended to a point where it is convenient to attach it to the cranes to supply pressure for their oil burners until they get up their own steam. One-half inch sponge asbestos covering is used for all live steam lines, and 85 per cent magnesia blocks prevent radiation from the boiler. Practically no make-up in feed water is necessary because

The old pole-treating plant had served its purpose and provided experience of value in designing the new plant.

all condensate from the headers in the treating vats is returned to the boiler through the feed-water system.

Boiler-feed and fuel-oil pumps are all of the duplex type and are provided in duplicate in order to avoid shut-downs while pumps are undergoing repairs. An extra or utility pump serves to load the cranes with fuel oil and for other special purposes. Strainers in the suction and in the discharge lines of the fuel pump guard against congestion of the burner, and an exhaust-steam heater raises the temperature of the oil just before it enters the burner. The burner operates at 30-lb. pressure. An air-dome equalizes the pressure in the oil feed line and a relief valve, the discharge of which feeds in to the suction line of the fuel pump, takes care of any excessive pressure without loss of fuel.

Creosote is stored in two 25,000-gal. tanks constructed of ¼-in. boiler plate and may be handled at will by means of the pumps located in the pit adjacent to the treating pits. Each storage tank may be heated in cold weather by steam coils. The level of creosote in the storage tanks is registered by a float gage. Storage facility for 15,000 gal. of fuel oil is of a similar construction. The three tanks are located at a distance from the boiler house consistent with the fire hazard and are mounted upon 2-in. beds of oiled sand overlaying concrete slabs. Provision also has been made for a future fuel oil tank.

Lighting of the yards adjacent to the treating plant is accomplished through two wide-angle 150-watt Crouse-Hinds flood lights mounted one on each end of the superstructure of the treating tanks. Similar lights are mounted on other buildings in different parts of the yards. In this way the setting of poles throughout the yards for lighting purposes was avoided.

Operation of this plant and its equipment throughout the past year has failed to show up any difficulties worth mentioning. Operators and the corporation alike are satisfied with both results and equipment.

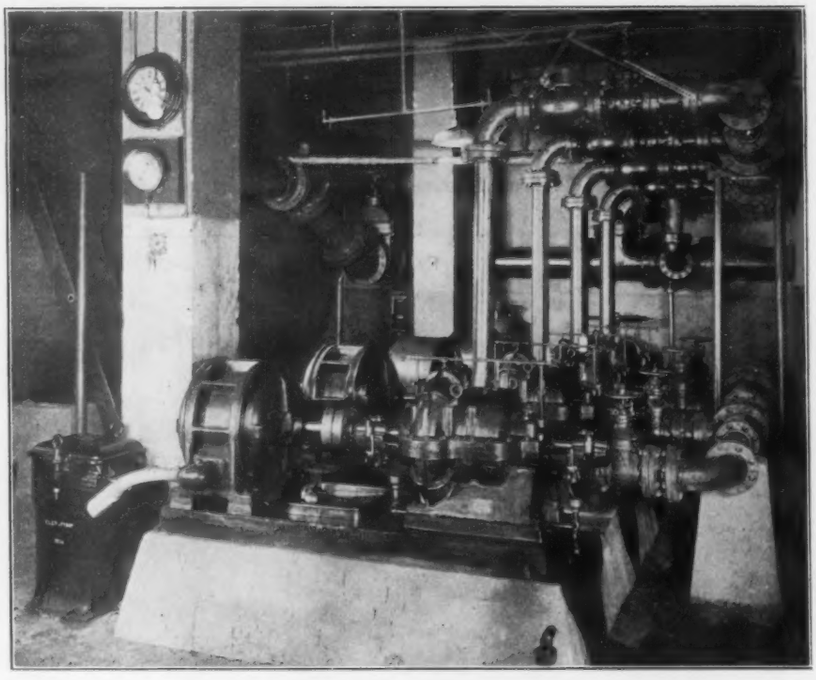
Shell Type Transformer Survives Fall to Pavement

The value of the design of shell-type distribution transformers was demonstrated recently in an accident in Ontario, Canada. In this design of transformer the coils are rigidly braced by the four outside legs of the core that tend to protect them from mechanical damage and exterior abrasion.

The particular accident in question occurred during the process of removing a 40-ft. pole. The line wires all had been taken from the pole, leaving the pole guyed four ways by means of ropes preparatory to the removal of the transformer, which was mounted at a height of 22 ft. above the ground. The tackle was rigged up to lower the transformer by means of a motor truck and ropes arranged through suitable sheaves.

Conditions were such that the truck had to go up a very steep incline and so was forced to start with somewhat of a jerk. The jerk proved to be too much for the old pole, which was rotted at the base, causing the butt of the pole to kick ahead sharply. This broke one of the guy-lines and permitted the pole and transformer to crash together to the concrete pavement. The cast-iron case was badly shattered, but the windings proved by test to be electrically and mechanically uninjured. A new terminal board, a few new core clamps and a new case were all the repairs required to restore the transformer to service.

One Fly Power Sufficient to Run Radio Set 25 Years.—The minute quantity of current necessary for each receiving set to control the local battery current is significantly stated by Dr. L. R. Whitney, director of research for the General Electric Company, who says: "If the amount of work done by a house-fly in crawling up a window pane a distance of one inch were to be put into a receiving tube as energy coming from space, it would suffice to actuate the outfit continuously for a quarter of a century." The radio set is controlled by the smallest unit of power of which man has made practical use. The controlled currents which do the work in the receivers or loud speaker are supplied by the "B" battery. However, the impulses coming from the antenna are the ones which actually cause the set to function.



A battery of motor-operated Midwest Engine Company's 3-stage pressure pumps serving 11 passenger and 4 freight elevators at the St. Francis Hotel, San Francisco. It will be noted that all pumps feed into a common header and to a common pressure tank. Pressure is maintained automatically at from 115 lb. to 135 lb. by means of automatic pressure regulators which are little more than contact-making pressure gages. These regulators control the operating current of control relays, which in turn control the motors through Electric Controller & Manufacturing Company automatic compensators. One relay and one compensator are installed for each motor. Operation is continuously intermittent, the motors being started and stopped every 2 to 3½ minutes. The relays are of the same manufacture as the compensators and are designed to give overload and short-circuit protection on the starting side of the compensators as well as on the running side as it is in the circuit ahead of the compensator. Slow action on overloads and quick action on short circuits is given by the relay through a combination dash-pot and spring arrangement.

Showing the auger-shaft tower set at an angle of 31 deg. from the perpendicular for drilling the lower 11 ft. of a corner-post hole for a dead-end tower.

Machine Bores Tower Foundations in Solid Rock

Apparatus Commonly Used for Drilling Pole Holes in Ordinary Earth Found Adaptable to Rocky Subsoil

Solid rock offers no terrors to the latest in earth-boring machines being used by the Union Gas & Electric Company of Cincinnati, Ohio. This company has been recently engaged in erecting a new transmission line over a particularly hilly and rocky country. An FWD earth-boring machine was experimented with on this project and found to be comparatively as efficient at boring holes for poles and tower footings in solid rock as in ordinary earth.

The 24-in. auger in action. After the 48-in. bit has been used to establish working space on a plane at a depth that can be common for all four corners, a 24-in. hole is sunk from that plane about 3 ft. deep.

Previously the operation of such machines has been restricted to those kinds of soil where holes could be dug by hand methods without blasting.

In the work of digging the holes for the tower abutments many different sizes of augers are used. First the 48-in. bit is used to bring the working level of each corner to the same plane. Due to the hilly nature of the country, this phase of the work frequently necessitates considerable digging with the big auger. After the 48-in. hole is completed to the proper depth, a 24-in. hole is bored about three feet deep at the bottom of the larger hole. From the bottom of the 24-in. hole an 8-in. hole is bored 11 ft. deep and at an angle of nine deg. from the vertical.

Rock is frequently encountered in the digging of the 8-in. hole. The thickness of this rock through which it is necessary to drill varies from a foot or so to the entire depth of the hole. When rock is met with, the first step in sinking the 8-in. hole is to bore a 1¾-in. hole through the rock to the required depth. To accomplish this a 1¾-in. drill is attached to the auger shaft and the hole put through at the rate of about an inch a minute. In one particular instance where the rock extended the full 11 ft. of depth this preliminary hole was completed in two hours and thirty minutes. (Such a hole drilled by hand methods would have taken three men three or four days.) After the small hole is bored it is shot with dynamite and then cleaned out with the 8-in. auger. The cleaning-out process requires but a few minutes.

In sinking the 8-in. holes for the corner posts it is necessary that the degree of slant not vary more than an inch from that desired.

The holes for the corner posts are sunk at an angle of 9 deg. from the perpendicular. It is necessary that the deviation from this specification and the direction of slant should not vary more than one inch in the 11-ft. depth. This exactness is assured by leveling the boring machine with instruments. Then the tower which carries the auger shaft is carefully tilted to the proper degree. At dead-end locations an additional hole is drilled for the braces. This hole is also put down from the bottom of the 24-in. hole. However, in the case of dead-end towers the main holes are dug at 4 deg. from the perpendicular while the holes for the braces are bored at 31 deg. from the perpendicular.

Shooting the 1¾-in. hole preparatory to cleaning it out with the 8-in auger. The debris from the shot can be seen spouting into the air back of the auger tower which has been swung clear. Note the blocking under the rear wheels for the purpose of leveling the truck.

The experiment with the FWD digger on this rock-drilling job was evidently satisfactory for the machine was kept busy 24 hours a day. Flood lights for night work were energized from a portable power plant.

Showing the 8-in. auger bit in place on the shaft and set at the 9-deg. angle ready to clean out the lower 11 ft. of the corner-post hole.

IDEAS FOR THE CONTRACTOR

Industrial Accident Commission Grounding Rules

A Summary of the Requirements which Are in Effect in All Places of Employment in California

By E. EARL BROWNE

There are a good many rules covering grounding requirements as they are enforced in different communities throughout the state. The subject of grounding is covered by the Electrical Utilization Safety Orders of the Industrial Accident Commission of the State of California, which are effective in all places of employment. Therefore they concern practically all contractors, and a uniform interpretation of the requirements to be met will be of interest.

The ground wire for the service entrance conduit shall be No. 6 B. & S. gage copper wire where wires in the service conduit are not larger than No. 0; for larger wires No. 4 is required. It shall be grounded inside the building with a separate ground wire which is not connected to the neutral ground.

All equipment connected to circuits of over 150 volts to ground shall be grounded. When over 150 volts and less than 300 volts, the equipment may be grounded to the conduit carrying the feed wires. A separate ground on the case or frame of the equipment is required where the potential is over 300 volts.

All metal conduit, armoured cable, and metal molding shall be grounded. Table 1 gives the size of wire required for various loads.

The neutral wire of all three-wire secondaries, except three-phase and d.c. neutrals, shall be grounded inside the building with an insulated copper wire of a size indicated by the main service cutouts and Table 1. This ground must be placed ahead of the service switch.

This ground shall be run as a separate conductor from the neutral to ground and be installed the same as required for a current-carrying conductor; unless run in approved conduit, it shall be installed as required for knob and tube work. If conduit is used, the conduit shall be grounded; the preferable way of accomplishing this is by bonding to the service conduit or the service conduit ground wire. Direct-current neutrals shall not be grounded within a ouilding.

More than one ground wire may be run in the same conduit; or a bus ground conductor of one wire may be used, provided it is of sufficient size to equal the total carrying capacities of the connected ground wires and is grounded at more than one place. However, the service conduit ground and the neutral ground shall not be run in the same conduit with the equipment grounds or the grounds for building installations.

Table 1—Required Sizes for Ground Wires
(Except for Service Entrance Conduit.)

Capacity of Automatic Cutouts in Amps.	Size of Copper Wire
1— 60	No. 10 B. & S. gage
61— 100	No. 8 B. & S. gage
101— 200	No. 6 B. & S. gage
201— 600	No. 4 B. & S. gage
601—1000	No. 2 B. & S. gage

The service conduit ground and the neutral ground may be run in the same conduit, the neutral ground wire being insulated. Bare wire may be used for all grounds with the exception of the neutral ground. Ground wires do not have to be run as required for a regular circuit wire, although they must be installed in a substantial and workmanlike manner.

Fig. 1 illustrates the application of these rules in a typical installation.

Bird Electric Company, 309 Main Street, Chico, Calif., is one of the progressive firms who have joined the California Electragists.

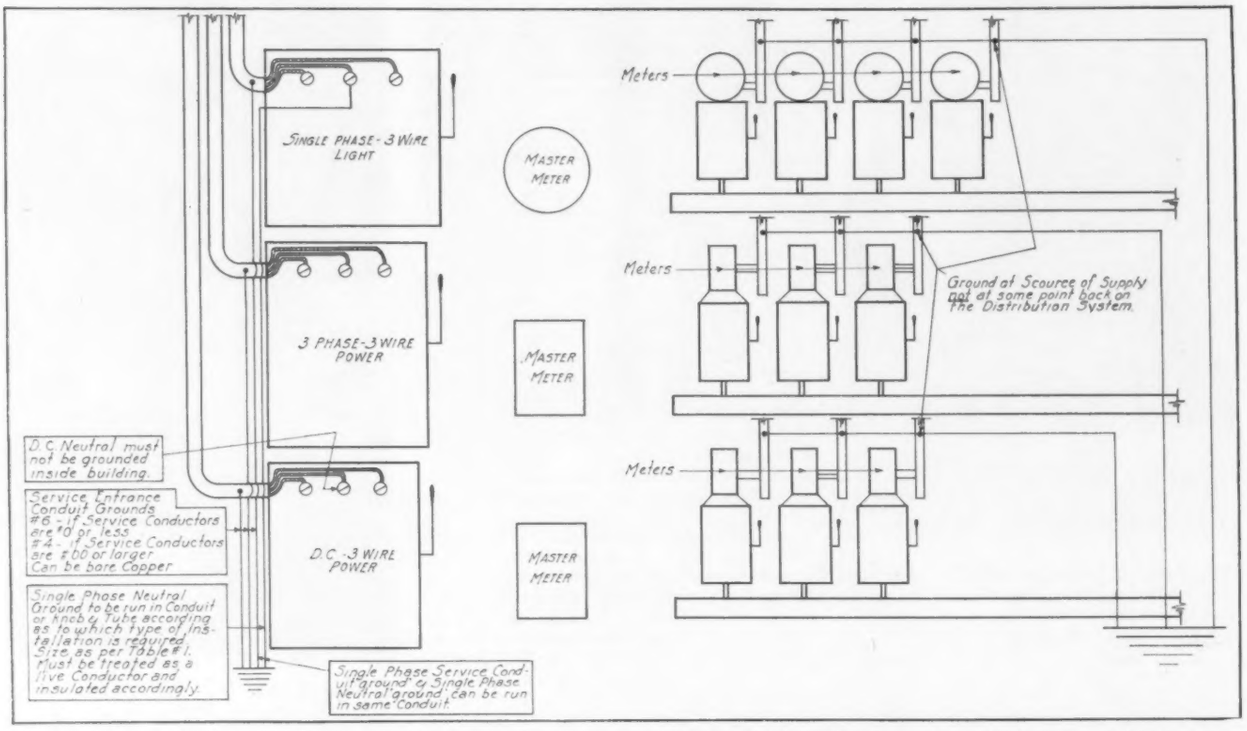

Meters
Meters
Meters
SINGLE PHASE - 3 WIRE LIGHT
3 PHASE - 3 WIRE POWER
D.C. - 3 WIRE POWER
MASTER METER
MASTER METER
MASTER METER
Ground at Source of Supply not at some point back on the Distribution System.
D.C. Neutral must not be grounded inside building.
Service Entrance Conduit Grounds #6 - if Service Conductors are #0 or less. #4 - if Service Conductors are #00 or larger. Can be bare Copper.
Single Phase Neutral Ground to be run in Conduit or Knob & Tube according as to which type of installation is required. Size as per Table #1. Must be treated as a live Conductor and insulated accordingly.
Single Phase Service Conduit ground & Single Phase Neutral ground can be run in same Conduit.

Fig. 1—Diagram showing grounding necessary to comply with the rules of the Industrial Accident Commission of the State of California

The Demand Factor in Heating and Cooking Loads

San Joaquin Light & Power Corporation Conducts Tests to Obtain Average Values Compared with the Connected Load

By E. J. CRAWFORD*
Assistant General Superintendent, San Joaquin Light & Power Corporation, Fresno, Calif.

Diversity of demand as compared with the connected load in heating and cooking installations is a very broad subject and may be viewed from many angles, but I assume that the inspector's chief interest lies in determining the demand with respect to installed capacity, in order that he may specify intelligently the switch and wire sizes required for any particular installation. It is also of prime importance to the public utility, as this demand also determines the size of transformers, meters, and service wire that adequately will serve the job.

We know from tests in our territory that the demand on the same size installation will vary with the city and suburban use. The suburban demand is heavier, probably due to the fact that much more baking is done in suburban homes, and this use will overlap the period during which the top elements of the range are in operation.

Graphic charts were taken on these tests so that we might study the nature of the load and learn not only the demand but also its duration. On quite a representative class of installations we found the following average demands for the several intervals specified:

15 minutes,	65 per cent of connected load
30 minutes,	60 per cent of connected load
1 hour,	54 per cent of connected load
2 hours,	34 per cent of connected load
3 hours,	31 per cent of connected load

This represents average conditions with respect to private residences, both city and suburban, having a combination load of cooking, heating and water heating in addition to lights. It is noticeable that the demand factor is much higher where only a limited amount of apparatus is installed; for example, where only a range and lights are installed as compared with a range, water heater, air heaters and lights. The diversity in the use of the greater quantity of apparatus cuts the demand factor materially.

In apartment houses we found little difference between the 15-minute and 30-minute demand, which was approximately 26 per cent of the connected load, and the demand tapered off from this value to 22 per cent, 19 per cent and 12 per cent, respectively, for one hour, one and one-half hours, and two hours.

In general, we estimate we can handle the metering and transformer capacity for residence loads at approximately 40 per cent of the installed capacity, except as noted in individual cases where there is no diversity. For apartments a still smaller capacity will be adequate, but for commercial loads we must count on the full connected load being in operation for an interval long enough to require full capacity to meet it.

In deciding on wire sizes for the various classes of heating and cooking loads it would undoubtedly be advisable to allow a greater margin of safety, and it might be well to call for a wire which would safely conduct 70 per cent of the connected load for residence installations, 60 per cent for apartments and 100 per cent for commercial installations.

These values, however, will probably vary with the geographical location, and it may be necessary to average the data secured from all sections of the state before specifying anything definite. There is just one warning I would like to give in concluding these remarks, and that is whatever regulations are adopted and approved as standard, that in making them you keep in mind the desirability of avoiding making the installation cost so prohibitive as to prevent the advancement of the use of this kind of load.

*Address made before the semi-annual meeting of the California Association of Electrical Inspectors recently held in San Francisco.

Service Conduit Increased from ¾-in. to 1½-in. in 300 Homes

Through the efforts of Frank J. Kiefer, field representative of the California Electrical Bureau, Baxton & Zweig, building contractors of San Francisco, recently increased the service conduit from ¾ in., as originally specified for a tract of 300 homes being erected in the Balboa Terrace district, to 1¼ in. so that electric ranges and water heaters might be installed, and later to 1½ in. so that air heaters might also be used. J. J. McDonald has the electrical contract for the homes.

Four homes were built with ¾-in. conduit services, twelve with 1¼-in., and the remaining homes will have 1½-in. conduit services. The first home in the tract to be sold was one which had only a ¾-in. service conduit. The buyers wanted an electric range and water heater, and a new service had to be installed before they could move in. Unfortunately this had not been planned when this home had been built so that it was necessary to install the new service on the exterior of the building. This condition is eliminated in the remainder of the homes in the tract that have been built under the new specifications. Mr. Kiefer also has been able to have one lighting outlet installed in each closet in each of the homes and has added an average of one convenience outlet to each home.

Own Installation Sells Show-case Lighting for Contractor

An example of the possibilities of selling show-case lighting through properly equipped cases in the contractor's own establishment was presented recently when R. J. Jacobs, electragist of Santa Rosa, was awarded the electrical lighting contract on forty show-cases for the White House in that city. X-ray show-case reflectors will be used in making the installation.

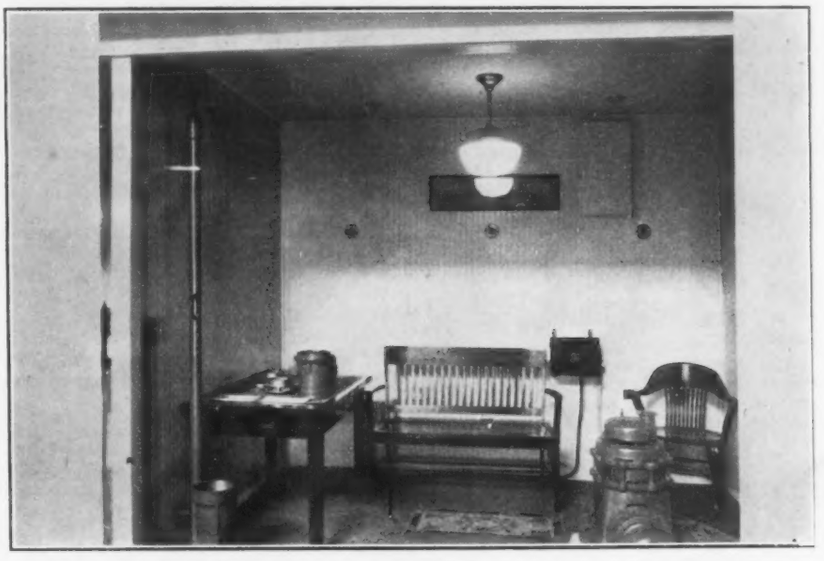
About a year and a half ago Mr. Jacobs installed similar equipment in his own show-cases. By being able to show his prospective customers exactly what could be expected, he has been able to sell similar installations more readily. He is enthusiastic about this method of selling.

Phillips Electric Company, 427 E. Mendocino Avenue, Stockton, Calif., has recently become a member of the California Electragists.

Pumping Plant Equipment Sold by Aid of Store Installation

An effective method of selling pump installations is being used by E. Roy Nash of Salinas and Monterey. He has a booth on one side of his store in which he has placed a modern pump installation using Westinghouse remote-control equipment and a Western turbine pump.

Anyone inquiring about pump installations is taken to this booth and shown just how an installation made by E. Roy Nash would operate. In this way it is frequently possible to sell a higher grade of installation than ordinariily would be purchased. The customer is better satisfied, too, because he knows beforehand just what equipment will be installed and what it will look like.



Modern pump installation in the store of E. Roy Nash at Salinas used in selling similar equipment

Electricity in the Modern Newspaper Pressroom

San Francisco Chronicle Has Many Interesting Applications and Has Developed an Elaborate System of Remote Control

The San Francisco Chronicle has one of the most complete and modern newspaper establishments in the West. Electricity has a very important role in its operation, and some of the applications of it are worthy of particular attention. The press is of the unit-type, which permits a great deal of flexibility in operation. At the present time fourteen units are installed, with foundations provided for four more units. The black and white press units are operated with four 100-hp. motors. One motor is capable of operating from one to five units, which is equivalent to a forty-page press as each unit has a capacity of eight pages. For over five units, two motors are paralleled. The color press is operated by a 125-hp. motor. A 10-hp. motor is used for starting purposes instead of these larger motors.

All of the electrical equipment of the pressroom is operated by remote control switches which connect with a central control room. Fourteen remote-control stations are installed at convenient locations on the color press and forty-two are on the black and white press. From each of these remote-control stations any of the operators may control the press. Each control station has six remote-control buttons labeled from top to bottom as follows: safe, run, decrease, increase, inch, and stop. In addition there is a signal button at a convenient location at each of these stations. A selector switch puts the remote-control stations on any of the different press unit combinations.

A row of red signal lamps extends completely around the press units. These lamps are normally lighted. When a man wishes to do any work about the press where any danger is involved, he presses the "safe" button of any control station. This extinguishes the red lamps and disconnects all other stations, and it is impossible to start the press until the "run" button on the same station has been pressed. Light signals always are given before starting the press. This practically eliminates all danger from press accidents; and any man found doing any dangerous work about the press without having pressed a "safe button" is discharged immediately.

The "decrease" and "increase" buttons control the speed of the press, which slows down or speeds up as long as the button is depressed; when the button is released, the press continues at the speed it was maintaining at the time of such release.

The "inch" button operates a momentary contact switch so that very small movements of the press may be secured. The "stop" button is self-explanatory.

In the event of a breakdown of any remote-control station, a throw-over switch disconnects all of the remote-control stations on the press and transfers the control to one remote-control station located on the wall away from the press and one station in the control room.

The paper rolls for the black and white press units are located in the basement. A convenient means of access is provided by poles down which the men slide; they return to the main floor in one-man elevators operated with compressed air. One of the features of the operation of the equipment is the fact that the press is not stopped to change rolls of paper. This is accomplished as follows: Supports are provided for two rolls of paper for each unit. A remote-control station is located beside each paper roll. The buttons on this are: paster, decrease, increase, right, and left. After the pressman has completed his pasting and is ready to change the paper rolls, he presses the "paster" button. This slows the press down to a predetermined speed, which has been found to be best suited for the particular pressman at work. The "increase" button causes the new roll of paper to be revolved into place. The paper of the new roll is then put on the line with that of the previous roll and the pressman then signals the operator who brings the press up to speed.

The "decrease" and "increase" buttons of the paster control station decrease and increase the tension of the paper feeding the press, and the "right" and "left" buttons control the margin of the paper from the sides of the press so that it can be centered. This is all automatic and can be done while the press is operating. A number of these tension and margin stations also are located at different places on the press.

There are five rolls to change and each has to be changed about every 9,000 papers. To change a roll in the old way by stopping the press required from three to five minutes. By this method the time lost in slowing down, changing the roll and bringing the press back up to speed is only from 15 to 30 seconds.

The 10-hp. starting motors are used for starting and running the press up to and including the third contact point on the controller; the 10- and the 100- or 125-hp. motor, as the case may be, are used on the fourth and fifth contacts and the larger motors alone on the sixth contact point.

The paper for the color press is carried on reels below the press. An electric hoist raises it into position. Remote-control switches raise or lower the reels. As in the case of the other paper reels, by means of remote-control buttons it may be moved to the right or left and the tension may be increased or decreased.

A conveyor system operated from the press takes the papers to the mailing room. After the press is stopped, the remaining papers on the conveyor are removed by running it with a small auxiliary motor.

Cline - Westinghouse rotary press-control equipment is used throughout. The electrical installation was made by H. S. Tittle, electrical contractor of San Francisco.

The Premier Electric Appliance Company is the firm name applied to the new washer, ironer and vacuum cleaner display and sales room recently opened at 1309 Third Street, Santa Monica, Calif., by C. F. Cross and C. R. Burgess. Savage washers and Premier Duplex cleaners are being featured.

Sonoma County Contractors Form New Development League

At a dinner meeting held recently at the Occidental Hotel, Santa Rosa, the electrical contractor-dealers and others in the industry in Sonoma County perfected an organization to be known as the Sonoma County Electrical Development League. LeRoy H. Crandall, field representative of the California Electrical Bureau, was responsible for bringing the group together. He called the meeting to order and then turned it over to W. W. Shushaw of the Pacific Gas and Electric Company, who presided over the business session. The aims and objects of the proposed club were outlined, followed by an extended discussion by those present.

Tully N. Cornick, electragist of Petaluma, was elected president; H. W. Jacobs, electragist of Santa Rosa, vice-president; Alfred L. Walker, Pacific Gas and Electric Company, Santa Rosa, secretary-treasurer. Herman Weber, O. A. Mundell and C. C. Van Fleet, all of Santa Rosa, were elected to the executive committee. The president appointed the following membership and attendance committee: C. C. Van Fleet, Santa Rosa; Humbert Gonella, Occidental and Sebastopol; William Kenyon, Guerneville and Monte Rio; C. H. Williams, Cloverdale; and A. C. Miller, Healdsburg.

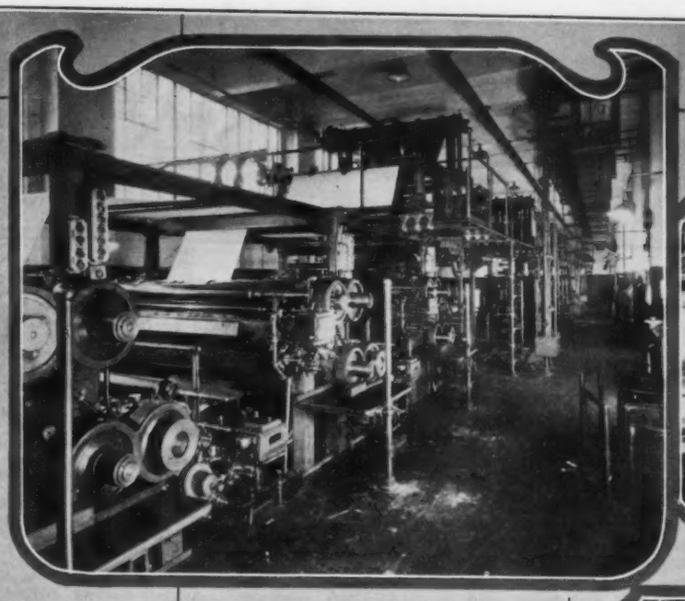
Representatives were present from Santa Rost, Petaluma, San Rafael, Healdsburg, and Occidental. Walter F. Price, executive secretary of the California Electragists, and M. A. Delew, former president of the California State Association of Electrical Contractors and Dealers, were also present. The next meeting of the league will be a dinner meeting at the Hotel Petaluma, Petaluma. The constitution and by-laws will be discussed at that time.

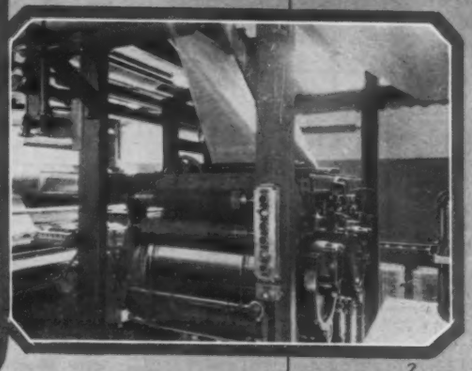
The Electric Shop has recently been opened at 1024 American Avenue, Long Beach, Calif., by L. H. Walter and C. V. Morrison of West Virginia, where they have been in the electrical business for the past fifteen years. They are featuring a distinctive and original type of lighting fixture for the wholesale and retail trade. They have obtained the services of C. S. Lipscomb, illumination engineer, as designer of their fixtures. Mr. Lipscomb was formerly owner of the Medbury Electric Company of Detroit, Mich.

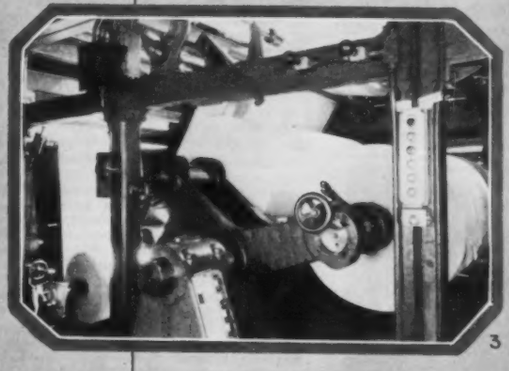
Cook Brothers, 653 South Figueroa Street, Los Angeles, formerly operating under the firm name of Cook Brothers' Hoover Store, have been appointed Western distributors of The Air Electric Cleaners. A. M. Bagley, former sales manager of the Federal Electric Company, is sales manager of the firm.

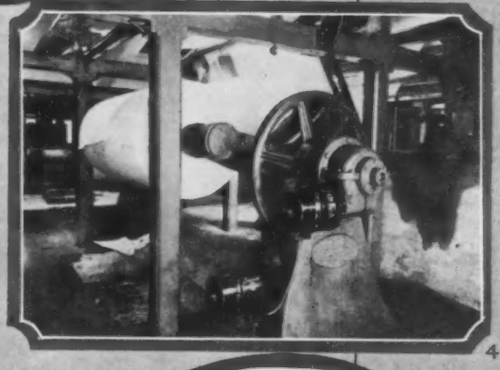
The Square Deal Electric Company, 5903 Pasadena Avenue, Los Angeles, a new store recently established by L. C. Westbrook, formerly of the Garvanza Electric Shop of that city, will stock a complete line of radio parts in addition to electrical supplies.

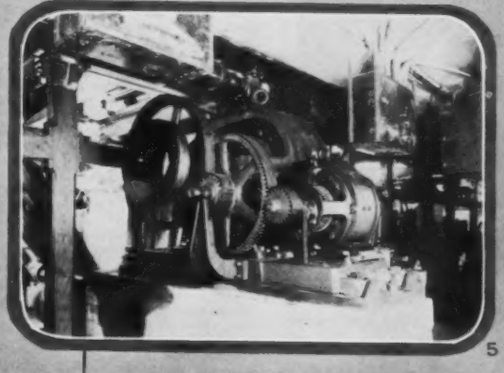
P. D. Franco, formerly electrical construction foreman for the Enterprise Electric Company, Pueblo, Colo., has opened a store at 798 Hilldale Avenue, Sherman, Calif., where he will conduct a general electrical contracting and retail business.

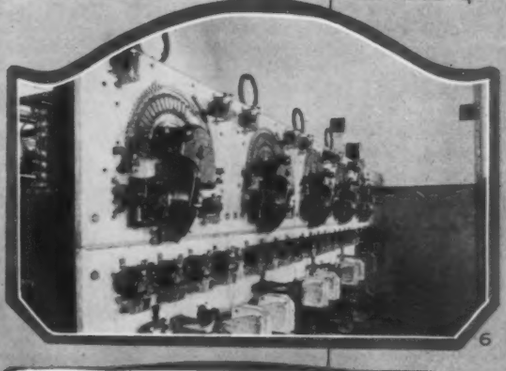


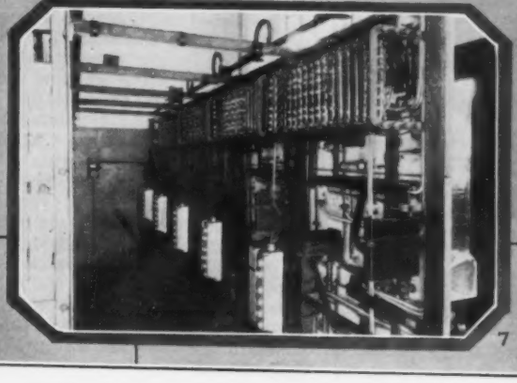












THE electrical installation in the San Francisco Chronicle's plant is one of the most modern in the country. A general view of the pressroom (1) shows the safety and signal lamps in the foreground and conveyors in the rear. One of the remote controls (2) located near the end of the press insures safe and efficient operation. A paster station (3) below the press is shown with the paper rolls and at 4 the tension and margin mechanism is shown with the two motors used in operating them. The starting and driving motors are shown in 5. The small motors which operate the main controllers (6) are on the front and emergency control stations are on the rear of the main board (7).

BETTER MERCHANDISING

Will You Sell Electrical Gifts for June Brides?

California Electrical Bureau Prepares Dealers' Helps and Advertising to Aid in Sales Campaign

That the June Bride may have a complete assortment of electrical gifts when she starts housekeeping after the honeymoon, a campaign, designed to put these gifts before the public, is to be initiated and sponsored by the California Electrical Bureau. This year's sales drive takes the place of the June Bride Weeks of the past and is planned to continue from about the middle of May until the last of June in order that every June Bride will get her share of electrical labor-savers.

Plans this year center around feature window displays, newspaper advertising and publicity, and intensive merchandising work on the part of the electrical retailers throughout California. To assist these retailers in the work of decorating for the campaign, the California Electrical Bureau has prepared a set of dealer helps consisting of a large poster and five counter cards depicting a June Bride and carrying the message, "Electrical Gifts for June Brides." Each of the five counter cards carries a different sales message which is subordinate to the main theme of the card. The sales slogans to be used are as follows: "Combine Beauty With Service," "Make Her Home Modern," "Are Lasting Remembrances," "Are Faithful Servants," "Mean Leisure Hours."

The counter cards are 7 x 11 in., and the large posters are 16 x 23 in. All of the material is printed in three colors, the counter cards being printed on 8-ply cardboard and equipped with easels. The posters will be on heavy chip board so that they will stand without sagging when supported in only one place. The sets are being prepared by the Bureau and will be delivered to retailers of electrical merchandise for $1.50 per set of two posters and five counter cards. The posters are adapted for use in window displays and the cards for use within the retailer's store.

It is the purpose of the Bureau to see that every retailer of electrical appliances in California is supplied with at least one of the June Bride posters, and for those retailers who do not order the sets a poster has been prepared on a good grade of coated paper stock. These posters will be sent to all retailers not ordering sets with the suggestion that the merchant use them in his window display inviting attention to the suitability of electrical appliances as wedding gifts.

To stimulate the use of specially decorated windows during the period of the campaign, six cash prizes are to be awarded to retailers featuring electrical gifts for June Brides. Although the sales campaign will extend over a period of about six weeks, the Bureau is anxious to have the entire industry concentrate its efforts on the first week in June, and for that reason the prizes in the window-decorating contest will be awarded for displays presented during that week. To enter the contest it will be necessary for the retailer to decorate his show windows with electrical gifts for the June Bride, have a picture taken of the display and send a glossy print of the exhibit to the California Electrical Bureau. The exhibits will be judged by a committee representing the electrical industry and the following prizes will be awarded: $50, first; $25, second; $20, third; $15, fourth; $10, fifth, and $5, sixth. To help defray the expense of having the pictures taken of the exhibits, the Bureau has arranged a special fund from which $1.50 will be paid to each contestant who does not win one of the prizes. The winners will be announced in the Journal of Electricity as usual.

The poster and counter cards will use this illustration in three colors.

The cooperation of central station companies, manufacturers and jobbers has been solicited by the Bureau with the aim that the electrical retailers may be informed of the coming campaign from as many sources as possible.

Letters have been sent to jobbers' and manufacturers' sales managers, requesting support from those organizations, and the following letter has been mailed to the salesmen of those outlets:

The success which any effort directed toward the retailers is going to meet with can be measured beforehand by the interest which the Jobbers's salesmen have in the activity. That is why we are addressing our first letter concern-this year's Electrical Wedding Gift Drive to you. If we can sell you on the value of the plan, more than half the battle is won; if you aren't interested in it no amount of effort on our part can make much of a success of it.

So please read this letter through thoroughly before deciding whether or not you can advantageously bend your efforts toward helping the drive along.

The idea is the same as June Bride Week drives of past years, except that we aren't going to concentrate on one "Week" this time, we are going to get the display material in the hands of the dealers about May 15 and urge them to hammer upon the thought of Electrical Wedding Gifts from that time until the end of June.

We will, however, designate one week, June 1-6, inclusive, as the week during which we want all dealers to give particular thought to their windows and we will offer six cash prizes of $50, $25, $20, $15, $10, $5, to those dealers who send in photographs of the best trimmed windows displayed during that week. Any dealer who sends in a picture which does not win a prize will receive $1.50 to partially reimburse him for the cost of the photograph.

We are getting out a brand-new poster this year which we believe is a beauty, and are planning to prepare five counter cards to be similar in design to the poster but each will have a different sales message. We are going to offer a set of two posters on heavy cardboard and five counter cards on easels to the dealers at cost, which will be $1.50 per set delivered. To those who do not care to purchase a set we will deliver free a poster on paper in order that they may at least tie in with the drive.

A full-page, three-color ad will appear in the May 1 issue of the Journal of Electricity; newspaper publicity will be arranged for throughout the state; the power companies will mail literature to their consumers calling attention to the appropriateness of electrical wedding gifts; and the power companies which are planning newspaper advertising during that time will also tie this ad in with the campaign.

The "big idea" behind the whole effort is to encourage people to think electrically when they think of wedding gifts. If we can get them to do that it means more business for your retailer customers and more business for you. Will you help?

Your sales manager will be kept fully posted on the progress of the drive—keep in touch with it through him. We will sincerely appreciate your help and so will your dealers.

Sincerely yours,

VICTOR W. HARTLEY,
Executive Secretary.

P.S.—Within a week we will send you a three-color reproduction of the new poster so you can show it to your dealers. Try to get them to purchase the cardboard posters and counter cards. The $1.50 will be well invested. And impress upon them that their checks must accompany all orders.

The sales managers of power companies serving the state have been addressed and their support requested in connection with the work of interesting retailers and the promotion of general advertising of the campaign. The power companies also have been asked to attend to the distribution of the posters and counter cards within their territories.

The direct announcement of the June Bride merchandising campaign has been made to the electrical dealers and other merchandisers of electrical appliances through a letter sent directly to them. This letter giving all of the information concerning the campaign reads as follows:

READ EVERY WORD OF THIS LETTER

A long letter starts to work under a handicap but to do justice to the story we want to tell you it is going to take a long letter and inasmuch as it means dollars and cents in your cash drawer it will be well worth your while to read it thoroughly.

June is almost here. June is looked upon as the outstanding wedding month. Weddings call for wedding gifts and there is not a more satisfactory or more appropriate wedding gift to be found than an electrical appliance. Briefly summed-up that's our story, and that's the story which we want to tell to every purchaser of wedding gifts; and we want to tell it through you so that the demand for electrical appliances will mean more business for you.

In telling this story four advertising media are to be employed:—Window Display, Newspapers, Direct Mail, and Radio.

In order that you may be fully informed as to the plans, we will outline just what it is proposed to do under each of the above headings.

Window Display. We have prepared a brand-new poster this year which is a beauty. It is printed in three colors and will be 16 x 23. In order that you may tie in with this drive we will furnish you a copy of this poster printed on paper, **absolutely free,** getting it in your hands about May 15th so that you may use it from that time on until the end of June. If, however, you desire to really work up an attractive June Bride display we will sell to you, at cost, which will be $1.50 per set delivered, a set composed of two of these posters printed upon heavy cardboard and five 7 x 11 reproductions of the poster also printed in three colors on cardboad equipped with easels, each of the five bearing a different sales message. With nothing whatever to gain through the sale of these posters we would urgently impress upon you the fact that $1.50 spent for a set of this material will be a real investment as it will offer so much greater possibilities of arranging sales producing windows than will the paper poster which we are able to furnish you free. To assist you in building up your sales the power companies are also planning to display these posters in their windows during June.

SIX CASH PRIZES are offered for the best trimmed electrical appliance windows displayed during the week of June 1-6. These prizes are $50, $25, $20, $15, $10, $5, and the winners will be selected from photographs sent in not later than June 13. Every retailer who sends in a photograph which does not win a prize will receive $1.50 to partially reimburse him for the cost of the photograph.

Newspapers. Five sample ads have been prepared and a set is being sent to every newspaper in California with the suggestion that they make an effort to sell these ads, to their local electrical retailers. We will furnish free the small facsimile reproduction of the window poster to tie in the ad with your window display and you can secure the cuts of appliances from your jobbers in order that you will have pictures of the particular line of appliances which you merchandise. As soon as a newspaper writes us that they have sold some of these ads to any of their local dealers and wish cuts we will also send them some publicity stories for use in the same issue as the ads in order to enhance the value of the ads. All power company advertising appearing during this period will be directly tied in with this electrical wedding gift drive.

Direct Mail. The power companies will enclose inserts in all of their mail during June calling the attention of their consumers to the appropriateness of electrical wedding gifts.

Radio. Arrangements are being made for the broadcasting of messages regarding this subject.

To make it easier for you to order the cardboard sets of window material, as you will undoubtedly wish it, we are enclosing herewith an order form and a self-addressed return envelope. Do not lay this away intending to fill it out later on, do it now and mail it immediately together with your check as no orders for these sets can be honored which are received after May 9th and no orders will be filled unless a check accompanies them.

If you are in doubt about any of the above plans ask your jobber's saleman as he has been given full information on the subject.

During the six weeks that the campaign is to be conducted the central stations have agreed to feature June Bride announcements in their advertising copy, thus assisting the electrical merchandisers in their efforts to announce the benefits of electrical devices to the public. In addition to this newspaper advertising, inserts, carrying a reproduction of the poster and counter cards, will be sent out with all mail directed to domestic consumers. These inserts will be similar to those used last year and will carry the message of the usefulness of electrical appliances.

Information concerning the June Bride sales activity has been sent to all of the electrical leagues and clubs in California with the request that the membership of these organizations support the campaign in every way possible. As a final effort to reach the public, it is planned to broadcast a series of radio talks dealing with the appropriateness of electrical gifts for the June Bride.

Publicity Aids Prepared for June Bride Gift Campaign

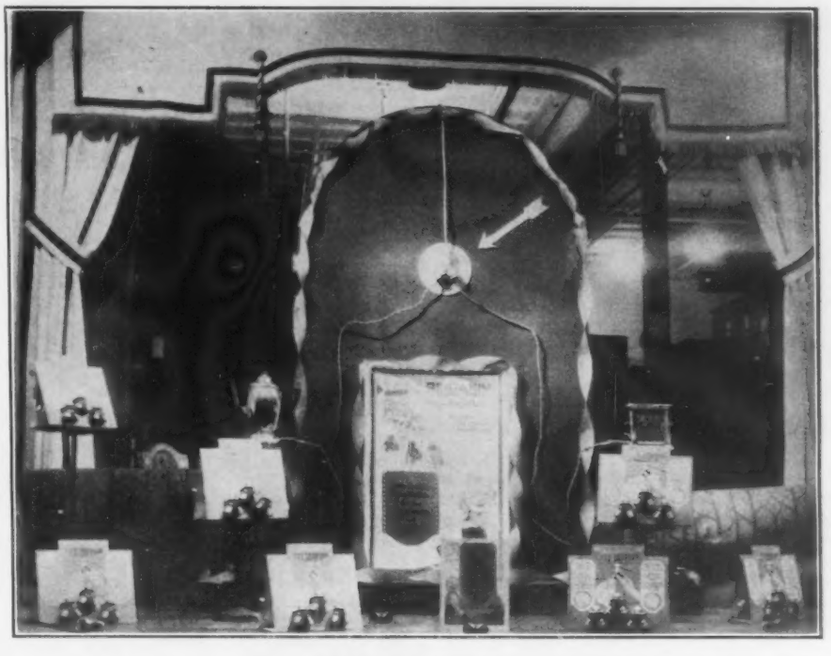
To focus attention upon electrical gifts for the bride, The Society for Electrical Development has prepared a complete assortment of advertising and publicity material for use by electrical merchandisers. The material includes window-display effects, newspaper advertising copy and literature for mailing.

There are eight different items in the assortment of material which the society is offering in combination packages ranging from about $50 to $5 per package. This year the society is featuring a window-display panel, 21½ x 31 in., the original for which was executed by a leading commercial artist. The reproduction will be in ten colors, with heavy board backing and easel, for use in both window displays and interiors.

Other selling helps include a full size, life-like, die cut, five-color reproduction of a bride on heavy board with easel back; an eight-page, three-color envelope size gift suggestion folder; bride cutouts, 8 in. high; two-color 7 x 12 in. window cards with selling message; advertising material consisting of advertising suggestions, proofs and mats, lantern slides and a sales manual containing hints on conducting a campaign, including window-display ideas and selling pointers.

All of the material will be ready for delivery the first week of May in plenty of time for most effective use in June. An informative circular giving complete prices and information about the material may be secured from The Society for Electrical Development, 522 Fifth Avenue, New York.

One of the window-display panels prepared by The Society for Electrical Development.



Whose Is It?

Despite the fact that the company submitting this entry in the window-display contest of the Benjamin Electric Manufacturing Company is entitled to one of the prizes, the owner of the display has not claimed the award. Inasmuch as the entry was not identified, the Benjamin company has been unable to locate the winner. According to the company, a good prize is waiting for the electrical dealer who arranged the display. To secure the prize the winner is requested to send a duplicate print of the original picture to the advertising department, Benjamin Electric Manufacturing Company, 120 Sangamon Street, Chicago, Ill.

NEWS OF THE INDUSTRY

Power Sites in Washington and California Requested

An application covering a proposed project on the Toutle River in Skamania and Cowlitz Counties, Wash., has been presented to the Federal Power Commission by Dr. H. W. Coe. The proposed installation consists of a dam at the outlet of Spirit Lake designed to raise its level 13 ft. and to create a storage capacity of 16,000 acre-ft.; a flume about 4,000 ft. long leading to a power house to have a capacity of about 300 hp.; and a diversion dam just below the mouth of Coldwater Creek with a flume about 10 miles long leading to a power house having a capacity of about 12,000 hp.

J. W. Preston, Jr., has applied for a preliminary permit for an installation in the Middle and South Forks of Mokelumne River and the North Fork of Calaveras River, in Calaveras County, Calif. The scheme of development provides for the diversion of the headwaters of the South Fork of the Mokelumne into McCarty Reservoir on the North Fork of the Calaveras, with a conduit about five miles in length leading to a power house on the stream; a diversion dam on the South Fork of the Mokelumne, two miles above its mouth, with a conduit leading to a power house on the Mokelumne three miles below the mouth of the North Fork; a diversion dam on the North Fork of the Calaveras River with a conduit leading to the Mokelumne River power house; and a reservoir on the Middle Fork of the Mokelumne formed by a dam above the mouth of Bear Creek, with a conduit leading to a power house on the South Fork, north of Railroad Flat. An alternative scheme provides for a reservoir on the South Fork of the Mokelumne River, near Railroad Flat, and the omission of the diversion from the South Fork and of the McCarty Reservoir and its power house, conduit, and other equipment. The types of the proposed structures and the capacities of the installation have not been determined.

Lewiston Accepts Offer of Power and Lumber Companies

Acceptance of the provisions contained in the proposal of the Inland Power & Light Company and the Clearwater Timber Company (Journal of Electricity, April 15, 1925, p. 297), was given by the city council of Lewiston Idaho, on April 13. The proposal of the two companies contemplates the erection of a 10,000-kw. hydroelectric plant and a sawmill with a yearly capacity of 200,000,000 ft. in the immediate vicinity of Lewiston.

The two companies voiced their willingness to go ahead with the development projects, provided the city secure for them at a reasonable price the necessary lands and right-of-way and withdraw its application to the Federal Power Commission for a permit to develop power on the Clearwater River. In accepting the proposal the city council stated that the city's application for the water permit will not be withdrawn for four weeks and that no action would be taken on the bonds for the municipal power project for a like period. If the companies proceed as proposed, both the application and bond issue will be withdrawn.

Southern Sierras Company Sues to Get New Valuation

Seeking to have the federal court overturn the valuation of its properties for rate-making purposes, made by the California Railroad Commission, on the grounds that such valuation is unduly low, the Southern Sierras Power Company has filed suit against the Railroad Commission in the Federal District Court of Los Angeles, and asking an increase in rates of approximately 10 per cent.

In this case, which involves an attempt to procure from the court an increase in practically all of its rates for electric service in the counties of Inyo, Kern, San Bernardino, Riverside and Imperial, except where The Southern Sierras Power Company comes into competition with the Southern California Edison Company, the company claims that the valuation of its properties, made by the Railroad Commission in 1920, is so low as to result in confiscation under the constitution of the United States. The court is asked to enjoin the Railroad Commission from enforcing the rates which are now in effect. The company also asks for an injunction to prevent interference by the Railroad Commission with a totally new schedule of higher rates which the company proposes to charge in lieu of the Railroad Commission's rates.

In 1920, in the last main rate case involving this public utility corporation, the Railroad Commission fixed the value of the properties used by the company in rendering its electric service at $7,618,541, and established rates upon that valuation. The commission in its decision declared that it used the reasonable cost of the property to the utility as the basis for this valuation. The company now contends that the cost to reproduce the properties at the highest peak prices of 1920 should have been used, and claims that the value should have been fixed at not less than $10,961,559.

Washington City May Install Modern Street Lighting System.—The city of Everett, Wash., is considering a plan to install a modern lighting system throughout the city by forming an improvement district. The project is backed by the Chamber of Commerce and various civic bodies.

Construction to Start on Feather River Power Development Project

Construction on the Buck's Creek power plant on the Feather River in northeastern California, it is expected will be started by the Feather River Power Company, San Francisco, within a month, according to Lars Jorgensen, head of the engineering department of the company. This project is the first of a series of seven with a total ultimate capacity of 415,000 hp. that is contemplated by the company.

The Buck's Creek plant will have an installed capacity of 60,000 hp. and will operate under a head of 2,480 ft. Thirty thousand-hp. units will be installed in the projects as far as is possible. According to present plans, development will be in the following order: Buck's Creek, 60,000 hp.; Bean Creek, 90,000 hp.; Nelson Point-Sherman Bar, 90.000 hp.; Middle Development, above Bald Rock Canyon, 120,000 hp.; Buck's Creek No. 2, 15,000 hp.; power plant below Bidwell Bar, 30,000 hp.; and below dam at junction of Middle and South Forks of the Feather River, 10,000 hp.

To control the flow of the river a series of reservoirs is contemplated. Two of these are planned for immediate development—Grizzly Valley, with a storage capacity of 92,000 acre-ft., and Gold Lake with a 19,000 acre-ft. capacity. Clio reservoir with a capacity of 130,000 acre-ft. probably will be the third site developed. Other reservoirs with capacities ranging from 115,000 acre-ft. to 96,000 acre-ft. will be constructed as they are needed.

Financing of the Buck's Creek project has been completed, according to Mr. Jorgensen, and as soon as water rights and rights-of-way are settled finally construction will be started. R. C. Storrie & Company will do the construction work on the project.

Negotiations for output of the Buck's Creek plant are being conducted with the Great Western Power Company. It is understood that delivery of the power will be at the plant switchboard.

Booklet on Aerial Photography Published.—"Engineering Data from Aerial Views" is the title of Bulletin No. 1 recently issued by Brock & Weymouth, Inc., Engineers, of 1607 Walnut Street, Philadelphia. This booklet gives a brief discussion of the various pieces of equipment used in aerial photography together with twelve interesting illustrations.

Colorado Minimum Lighting Bill Not Passed by Senate

Efforts of the electrical industry in Colorado to have the state legislature adopt a measure providing for minimum standards of lighting in places of education, amusement, and employment (Journal of Electricity, March 15, 1925, p. 224), failed due to a political deadlock at the end of the session. After having successfully passed the house by a margin of 47 to 7, the measure was "footballed" by various senate committees. In the final committee, even with a willingness of five of the seven committee members to report the bill favorably to the committee of the whole, the chairman refused to take such action.

The measure which did not ask for an appropriation or create any new jobs was considered certain of passage on merit alone, but its adoption was sacrificed to personal politics, according to members of the Electrical Cooperative League of Denver who sponsored the measure. Plans are already under way for the introduction of a similar measure at the next session of the legislature two years hence.

Book on Political Ownership Is Published by N.E.L.A.

"Political Ownership and the Electric Light and Power Industry" is the title of a book just issued by the National Electric Light Association under the direction of the Public Relations Section executive committee. In six sections the book discusses all phases of the municipal ownership question and presents much valuable data.

The first section is devoted to a series of questions usually asked regarding government ownership with answers covering each question. The second section contains opinions and expressions by people prominent in political, public and business life. Sections three and four are devoted to graphic comparisons and statistics between municipal plants and private companies. Part five lists abandoned municipal plants by states. Part six contains a brief history of the municipal-ownership movement.

Copies of the book have been distributed to all member companies. Cloth-bound copies are being distributed to all college and university libraries and to public libraries. Additional copies may be secured from the headquarters of the N.E.L.A. at $1 each for paper bound and $1.50 each for cloth bound.

Electrification of Washington Farms to be Surveyed

Plans looking toward a survey of the farming districts in Washington, from the point of view of the electrical industry, were prepared at a meeting of the Washington Committee on the Relation of Electricity to Agriculture held at Pullman, Wash., in January of this year. It has been announced recently that this work will be carried on by Prof. L. J. Smith, head of the department of agricultural engineering at Washington State College. Work will be started in June, after the close of the present college year. The survey will be similar to that conducted by the Oregon Committee on the Relation of Electricity to Agriculture. (Journal of Electricity, Sept. 15, 1924, p. 221.)

The survey will cover widely separated districts embracing all the agricultural industry of the state, and will attempt to discover the extent to which the farms are electrified and what use is being made of electric service in the different districts.

At the Pullman meeting a small executive committee was chosen to direct the work. The chairman of this committee is E. C. Johnson, dean and director of the college of agriculture and the state experiment station, Washington State College. The other members, in addition to Prof. L. J. Smith, are: D. L. Huntington, president of the Washington Water Power Company; A. W. Leonard, president of the Puget Sound Power & Light Company; Huston McCroskey, rancher of Garfield, Wash.; and H. V. Carpenter, dean of engineering, Washington State College.

Portland Electric Power Company Has $2,000,000 Budget

With a budget for 1925 totaling about $2,000,000, the Portland Electric Power Company is well under way with its development work for this year. The largest single item is for a 60,000-volt transmission line from Oregon City to Salem, Ore., via Newberg, involving the working over of 20 miles of present line between Oregon City and Newberg, and the building of 30 miles of new line from there to Salem. This line, which will be placed on single wood poles with triangular construction, is the second transmission line between the terminal points, but it will follow a different route from the old one and tap a new territory.

A second important addition to the transmission system as proposed in the budget is the construction of the second circuit from the new Oak Grove plant to Cazadero, Ore., about 18 miles. This circuit will be placed on the steel towers installed as part of the Oak Grove development, and, though spaced for 115,000 volts, will be operated for the present at 60,000 volts.

The budget further provides for a new subway from Station "L," the principal steam plant of the company, to Sullivan's Gulch in Portland, a distance of about 6,500 ft. In this subway will be laid two 11,000-volt cables, and it is planned to continue this underground construction in future years from the gulch to the Knott Street substation. Other minor additions to the transmission system are projected, as are also numerous small items in the distribution group.

No additional generating capacity is planned for 1925, though a number of relatively small improvements will be made at several of the plants and substations. A small allotment is made in the budget for experimental and preliminary development work on the company's holdings on the Clackamas River.

Tie Line Near Completion.—The tying in of a 66,000-volt transmission line from Taunton to Hanford, Wash., will be completed in the near future by the Pacific Power & Light Company. The line connects with the lines of the Washington Water Power Company at Taunton, and ties into the Pacific company's trunk line, which supplies the Yakima valley, at Priest Rapids and Hanford.

No Apology Is to Be Made for Wyer Niagara Falls Report

Washington Correspondence.

Despite the storm of disapproval which has followed the publication by the Smithsonian Institution of Samuel D. Wyer's monograph on "Niagara Falls: Its Power Possibilities and Preservation," there is every evidence that no apologies are to be offered for the publication. Officials of the Institution seem to regard the work as a fair presentation of the subject that was done exceptionally well in the small compass of the pamphlet. It is admitted that half a dozen words, calculated to irritate, might have been omitted without weakening the document, but even these are such trifles as "dodging" sinking funds and "subsidizing" rural lines.

Sir Adam Beck's reply would have made more impression on persons who think, it is pointed out, had he not resorted to the calling of names. The publication, in this instance, is entirely comparable with hundreds of scientific papers which the Institution has put out. Exceptions are taken to many of them by those who are not in accord with the views expressed, but ordinarily the objections are pitched on a somewhat higher plane than those in this instance which apparently are inspired largely by the Hearst newspapers and the National Popular Government League. The latter institution has the reputation of being ultra-radical. The publicity which has been given the report by the attacks upon it has had the effect of bringing in numerous favorable appraisals of it.

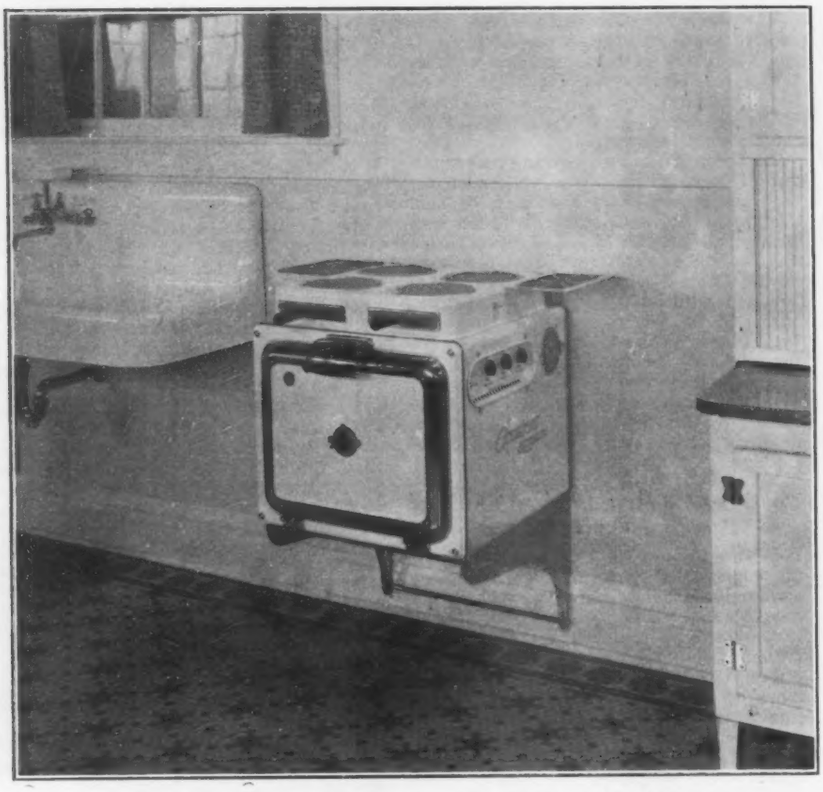
Apparently the protests have not impressed the administration, as it is understood that Mr. Wyer has been sent to Muscle Shoals to make a special report for the President.

Florence Lake Tunnel Officially Goes Into Service

The gates at the north portal of the Florence Lake tunnel of the Southern California Edison Company were opened officially for the first time the morning of April 13. This act started the passage of the first water to be diverted from the upper San Joaquin River through the tunnel and Huntington Lake, and marked the final step in the completion of the world's largest power tunnel.

Only a small amount of water was permitted to flow through the gates. This amount will be increased slowly from time to time until the full flow is being passed. In adopting this method of regulating the flow, it will be possible to wash the accumulated debris from the tunnel slowly. Otherwise this material would be washed en masse into Huntington Lake and result in clouding the waters for some time until the sediment finally sank to the bottom.

Kuhara Mining Company, Japan, Plans Power Plant.—A hydroelectric power project to develop an initial capacity of 50,000 kw. through the appropriation of water from the Shirakawa and Koshirakawa Rivers, running through the prefectures of Gifu and Toyama, Japan, is planned by the Kuhara Mining Company. Construction is expected to start shortly. The proposed development has a potential ultimate capacity of 100,000 kw.



New Armstrong automatic electric range installed in modern kitchen

New Type of Electric Range Has Been Put on Market

A new type domestic electric range has been placed on the market by the Armstrong Manufacturing Company of Huntington, W. Va., that is claimed to have many refinements. One of the most striking features is the absence of legs on the range, which is installed in the kitchen by means of a wall bracket.

The new product of the company, which originated the Armstrong table stove ten years ago, is finished in white enamel and polished nickel throughout. According to the manufacturer, all of the heating elements can be replaced without the use of tools, and it is claimed that the entire range can be taken apart and assembled with the use of only a screw driver.

The body of the range is 23 x 23 in., and wall brackets are designed to support the range, which weighs less than 150 lb. Four heating elements are located on top of the range, two of these being of the open type for quick heating and two of the closed type for cooking of longer duration. The two closed elements include the Armstrong principle of a family-sized waffle mold and toaster drawer, heated both sides at once by a divided element. The manufacturer states that regular cooking operations may be carried on while the front elements are being used for waffle or toast, employing the same heat. Three heat switches control all heating elements.

Oven control is secured by means of a clock-control device which will turn the current on at any predetermined time, maintain a desired temperature, and turn it off at a second stated time. The design of the range is claimed to produce new economies of current consumption.

Alhambra to Install New Street Illuminating System

The city of Alhambra, Calif., nine miles from Los Angeles, recently awarded the contract for a new street-lighting system for its principal thoroughfare to J. C. Perry of Los Angeles. This ornamental lighting will extend on Main Street from the eastern to the western city limits, a distance of about three miles.

The higher standard is the new one being installed along the main business street of Alhambra, Calif. Note overhead wiring to old standard.

It will consist of 238 two-light ornamental standards manufactured by the Union Metal Manufacturing Company of Canton, Ohio, each topped with two General Electric medium alabaster rippled glass Novalux units. This system will replace five-light standards overhead and now in use in the business section.

The new standards are 17 ft. 6 in. to the light center and are spaced opposite each other an average of 135 ft. apart. Each is equipped with a General Electric auto transformer with taps for 4,000, 6,000 and 10,000-lumen lamps. Six thousand-lumen lamps will be installed. The underground system of rigid iron conduit and cambric lead-covered cable has been specified to take care of future requirements.

As a safety feature, each standard is equipped with a disconnecting type pothead. If the standard is run into by an automobile or truck and is bent over, the wires are disconnected from the circuit by the pothead so that there is no danger from live wires, and also the service to all the other posts in that circuit is uninterrupted.

The wiring of this system is so installed that both lights in alternate standards are turned off at midnight, and the lights in the remaining standards continue to burn all night. In this scheme the system has a balanced appearance after midnight. Also there is only one circuit up each post and therefore only one pothead instead of two.

Electric Traffic Towers to Be Installed in Denver

Electric traffic towers will be installed on the principal downtown streets in the business section of Denver to replace traffic policemen, according to the proposed new traffic ordinances, an outline of which has just been announced by the city administration in Denver. The erection of these towers in a large district in which the parking laws will be enforced, different headlight standards, and definite rulings concerning the use of colored lamps on automobiles will make up the major changes in the proposed ordinance.

From time to time a new electric system of traffic control has been considered, but evidently the matter has been allowed to drop due either to lack of funds or of interest, according to reports from Denver. At the present time no electric traffic signals are in use at any point in the city, and the installation of the proposed towers will relieve in a great measure the serious traffic problems now being encountered in that city.

Operating Manual on Polyphase Watt-Hour Meters Published.—"Connection Checks for Polyphase Watt-Hour Meters" is the subject of Bulletin No. 8 of the Engineering Extension Service of Purdue University. This work is largely a compilation of material which previously has appeared in various publications. The booklet is designed to serve as an operating manual on the subject. All theory as to why the checks work out is omitted. Each different method is laid out carefully in the most logical order and lists the special apparatus needed, the method of procedure, the interpretation of results, the advantages and the disadvantages of the method.

Second Annual Meeting of Northwest Technical Section Held in Spokane April 16-17

The influence of power systems on radio reception, the application of electricity to logging operations, accident prevention, and underground distribution systems, were among the subjects bringing forth discussion at the two-day general meeting of the Technical Section of the Northwest Electric Light and Power Association at Spokane, April 16-17. This meeting was the second annual gathering of the section, and the attendance of 120 delegates and visitors exceeded last year's attendance by 38 per cent. Sessions were held in the Davenport Hotel.

H. H. Schoolfield, chief engineer, Pacific Power & Light Company, chairman of the executive committee of the Technical Section, presided over the meeting. The delegates were welcomed by W. H. Ude, director of public relations, The Washington Water Power Company. R. M. Boykin, manager central district, Puget Sound Power & Light Company, Seattle, president of the association, responded to Mr. Ude.

Committee on Cooperation with Regulatory Bodies

Starting the scheduled work of the meeting, Mr. Schoolfield read the report of the committee on cooperation with regulatory bodies, in the absence of its chairman, H. J. Flagg, assistant to general manager, Grays Harbor Railway & Light Company, Aberdeen, Wash. Mr. Flagg reported that the work of his committee had been light in the past year due to the fact that few questions affecting the industry at large had been before the regulatory bodies of the various states. This, he stated, was probably on account of the natural reluctance of such bodies to initiate any important subject in the face of the general elections of November followed by the legislative sessions early this year.

Inductive Co-ordination Committee

Inductive co-ordination was the next subject on the schedule, and G. E. Quinan, chief electrical engineer, Puget Sound Power & Light Company, chairman of that committee, took the chair. Mr. Quinan explained that the work of his committee used to be confined to interference with telephone communication, but that now this problem is largely a national one in which the national committee works with the American Telephone & Telegraph Company, and that there is a common ground of understanding between them. The principal problem before the local committee now is to dispel the popular conception that power systems cause all the interference with radio reception. He pointed out that an excellent opportunity to make friends for the company lies in the routine investigation of radio complaints, which furnishes an ideal medium for the company to get in touch with its customers at a time when they are at recreation.

W. R. Cornell, radio interference department, Portland Electric Power Company, was asked to report on the situation found in the Portland territory, and told of methods he used in running down complaints with the aid of a Ford equipped with a sensitive receiving set and a loop aerial. Among the commonest causes of power system interference he found were: loose tie wires, insulated tie wires, loose splices, tree grounds, trolley contacts and poor bonding of rails on the street car system. He asserted that the largest percentage of trouble with radio reception came from devices beyond the control of the power company, and showed by demonstration the effect of several of these devices on a receiving set. The best known of the outside causes were: small motors, battery chargers, violet ray machines, X-Rays, mercury arc rectifiers, signal systems, heating pads and passing automobiles.

As a further contribution to the report of this committee, E. V. Olsen, assistant to the general agent, The Washington Water Power Company, Spokane, demonstrated the effect of poorly operated regenerative sets on radio reception. Run-down batteries, loose contacts and faulty insulation in antennas and grounds were shown to be the principal causes of trouble arising from this source.

General discussion of the subject brought about an agreement between men who had handled radio complaints for their respective companies that only 20 per cent of all such complaints were traceable to sources within the control of the power company. L. H. Kistler, superintendent of meter department, Northwestern Electric Company, Portland, reported that his investigation had disclosed several bad insulators on 11,000-volt lines, the changing of which probably saved considerable future trouble.

In summarizing the findings of his committee, Mr. Quinan made the following recommendations: that each company should be prompt in attempting to locate trouble, and if responsible for the trouble, to remedy it; that each company should work with the federal supervisor of radio, and with radio dealers, clubs and associations; that all complaints should be looked after promptly and reported on in writing with a letter sent to the complainant; and that the public relations department of each company should be advised of the activity of the radio complaint department with the view to making the most of the opportunity afforded for favorable publicity.

Hydraulic Power Committee

Passing to a consideration of the work of the hydraulic power committee, R. L. Hearn, assistant chief engineer, The Washington Water Power Company, chairman, explained how the activities of his committee were coordinated with those of the national committee, of which he is also chairman. Among the subjects to be reported upon by the national committee in which the Northwest committee is cooperating are, "Power Plant Layout," allotted to the Pacific Coast Electrical Association, "Mechanical Reliability of Water Power Units," Water Wheel Testing and Operating Records of Plant Discharge," "Forecasting Water Supply," and "Pitting of Hydraulic Turbine Runners." The subject of fish ladders has been delegated to the Northwest committee, but it was explained that no work on this subject will be undertaken until after the special committee now working on it is finished with its experiments.

J. B. Fisken, consulting engineer, The Washington Water Power Company, reported on the experiments of his company in forecasting the water supply of Coeur d'Alene Lake by measuring the snowfall on the water sheds of the three main rivers feeding this lake. This was done by finding the average depth and density of the snow in the various areas of the water sheds and by calculation reducing this to second-feet of water. By this method he had been able to forecast the actual runoff within ten per cent. Such information it was pointed out is important in governing the size of the spillway of storage reservoirs so that flood waters will not overflow lands, and, in the case of companies maintaining steam standbys, in estimating the amount of coal to keep in reserve from storage season to storage season. He told of the results obtained by Dr. G. F. McEwen, of the Scripps Institution of Biological Research, La Jolla, Calif., in forecasting precipitation from ocean temperatures, which has proved fairly accurate over large areas of California.

In the report on power-plant efficiency test as related to plant operation, L. J. Pospisil, mechanical engineer, The Washington Water Power Company, described the Gibson method of obtaining the rate of flow of water in a penstock, involving a photographic indication of the result of the changes in pressure in the penstock when the gates are closed against the flow. By this process it was shown that the water-wheel units in the station can be calibrated so as to be used as water meters in future operation. D. W. Proebstel, superintendent of tests, Portland Electric Power Company, explained his adaptation of the Pitot tube method to accomplish the same purpose, his method being known as the multiple-tube method. The application of these tests to plant operation was discussed by E. H. Collins, assistant engineer, The Washington Water Power Company, who showed how, after the efficiency of each individual water-wheel unit in the station was known, the system could be operated the more efficiently. He pointed out that frequently a saving of more than one per cent was possible.

A paper descriptive of the Oak Grove development of the Portland Electric Power Company, by H. A. Rands, project engineer, was read by R. S. Carroll, engineer in the distribution department of that company. The report of the committee closed with a preliminary report on the performance of rubber seal rings in turbines by J. H. Siegfried, superintendent of power, Pacific Power & Light Company, Pasco, Wash., in which it was stated that these rings had not been found altogether satisfactory in the installations on which they had been tried. Other users of these rings had nothing to report as yet.

Apparatus Committee

As part of the report of the apparatus committee, headed by R. R. Robley, operating engineer, Portland Electric Power Company, a paper on "Electricity in the Woods" was presented by R. E. Gray, electrical engineer, Snoqualmie Falls Lumber Company, Snoqualmie Falls, Wash. In this paper, which will be published in full by the Journal of Electricity in a later issue, Mr. Gray described the equipment used by his com-

pany in its electric logging operations, giving some data on the performance of the equipment. The paper precipitated considerable discussion, in which E. F. Whitney, General Electric Company, Portland, pointed out the possibilities in this class of business for central station companies. He made the significant statement that there were some 2,000 logging engines operating in the Northwest, of which only about 25 were driven electrically. This discussion closed the first day's session.

On re-convening the following morning, the meeting heard a continuation of the report of the apparatus committee. The results of tests covering the range of ratio and phase angle of the comparatively new Niagara-type, air-insulated, current transformers were given in a paper by J. Hellenthal, superintendent of transformation, central district, Puget Sound Power & Light Company. He stated that the type of construction and light weight of these transformers made them adaptable for installation in a variety of locations, and he particularly recommended them for service involving differential relay protection.

Different types of temperature indicators for distribution transformers were demonstrated by D. W. Proebstel, who stated that the economic and safe loading of distribution transformers should be on a heat basis rather than on a kilowatt basis, and that manufacturers realizing this had produced four types of thermal indictors.

Overhead Systems Committee

The assignment by the national overhead systems committee to the Northwest committee, of which Z. E. Merrill, assistant general manager, Mountain States Power Company, Albany, Ore., is chairman, of the subject of a comparison between treated and untreated poles was announced by Mr. Merrill. This assignment came too late to be completed before this year's convention but will be continued next year. He announced also that the committee has undertaken the preparation of a map of transmission systems of this geographic division, completion of which is expected by the end of this association year.

First among the subjects to be presented by this committee was the progress report of the tests of pin-type insulators being conducted at the Oregon Agricultural College, Corvallis, Ore., by F. O. McMillan, associate professor of electrical engineering. He explained that insulators of four different voltage ranges from six manufacturers were being tested in accordance with A.I.E.E. standards (Journal of Electricity, Oct. 15, 1924, p. 302) but that a breakdown in one of the high-voltage transformers had delayed these tests somewhat. He described the apparatus and methods used in the different tests, and presented exhibits consisting of photographs and drawings showing dimensions of insulators, and data sheets on which the test data were being recorded. From these tests it is hoped that a uniform method of rating insulators will be evolved.

On the subject of live-line insulator testing three devices were displayed and explained. P. P. Ashworth, distribution engineer, Utah Power & Light Company, Salt Lake City, explained the Aislometer used by his company. This instrument is based on the principal of the electrostatic voltmeter, and when contact is made across a single disc of a string of insulators the vane deflects due to the difference in potential which should exist in the case of a sound insulator. The degree of deflection indicates the stage of depreciation of that disc of the insulator. Similar in purpose is the Iler instrument used by The Washington Water Power Company, which was explained by A. H. Beckwith, assistant superintendent light and power. The Johnson Buzz Stick, which also was explained by Mr. Beckwith, indicates the difference in potential by the sound of an arc passing across a gap set for a certain voltage. Discussion brought out the advantages and disadvantages of the different types of instruments.

A preliminary report on the butt-treating of cedar poles was read by L. R. Gamble, assistant engineer, The Washington Water Power Company. The importance of the subject was brought out by his statement that in 1920 only 43 per cent of the output of Western red cedar was treated, while in 1924, 90 per cent was treated, indicating a decided increase in the demand for treated poles. All the different methods of treatment were discussed with special reference to the specification "B" of the open tank impregnation method, which is one of the most common treatments used. He also described the belt, hammer and machine methods of perforating the fiber of the wood to increase the penetration of the preserving agent, giving greater efficacy to the treatment. Later, taking up the economics of the subject, he showed a simple method of determining on a given piece of construction how much difference in pole cost for treating the utility company might be justified in paying to obtain the lowest net cost, considering the interest, depreciation, operation and maintenance over the length of life of the line.

W. E. Melarkey, General Electric Company, San Francisco, showed a moving picture illustrating the operation of a new type of automatic supervisory equipment for controlling distant stations from a central dispatching station.

Accident Prevention Committee

The afternoon session opened with the report of the accident prevention committee with J. B. Fisken, chairman of the committee in the chair. In reviewing the deliberations of his committee he called attention to one of the commonest causes of accidents in many sections of this geographic division, namely, the moving of hay derricks under transmission lines. The committee had found that publicity was of little avail in coping with this hazard, and recommended that legislation be proposed of a nature to require the movers of hay derricks to conform to certain procedure intended to eliminate the possibility of accident. The committee also noted a growing hazard in the stringing and maintaining of radio aerials near power lines, and recommended legislation to combat this problem. A further recommendation was made to the effect that the public-relations departments of the various companies be advised of the opportunity existing for the dissemination of publicity warning of the dangers.

The committee took cognizance of a new class of accidents as represented by a case reported by the Idaho Power Company, Boise, in which an airplane was piloted into an 11,000-volt line. Among the recommendations of the committee was one advising against the use of pulmotors. These, the report said, are dangerous in the hands of persons unskilled in their use, whereas the Schaefer prone-pressure method of resuscitation can be learned readily by anyone and has been found to be more successful than any device or other method.

In a paper on the general subject of accident prevention, G. I. Drennan, field superintendent, Pacific Power & Light Company, Walla, Walla, Wash., declared that the best results in safety work were secured when the men were taught to work with safety in mind. He told of organizing committees in each place on his company's system where two or more men were working, and of these committees reporting monthly to him of their activities.

In the general discussion, D. W. Proebstel told of the efforts of the Portland Electric Power Company to induce police and fire departments and schools to teach the Schaefer method. T. G. Aston, claim, right of way and tax agent, The Washington Water Power Company, stated that the best protective devices are of no avail unless the men are trained in safety work. H. H. Sanderson, Sanderson Safety Supply Company, Seattle, displayed various safety appliances and protective devices that are on the market.

Meter Committee

In a paper on meter maintenance, methods and practices, R. E. Thatcher, superintendent of service, central district, Puget Sound Power & Light Company, chairman of the meter committee, touched on a variety of subjects, as, meter installation in city and country; testing instrument transformers; calibrating rotating standards and demand instruments; entrance switches and testing facilities; oil in meter bearings; and education of employees. An interesting development in metering was brought out when he explained the policy of his company in using polyphase meters for measuring 3-wire loads, because of the inherent inaccuracy of 3-wire meters under conditions of unbalanced voltage and overload.

In the discussion that followed, R. M. Freeman, meter supervisor, Pacific Power & Light Company, Walla Walla, Wash., laid emphasis on the necessity of having meter testers inspect the entire installation with a view to finding any irregularity. He stated that in checking for load ahead of the meter, connected load, meter constant, and such other items as might affect the billing of that customer's account, enough adverse errors in billing might be corrected to make meter testing pay for itself.

Prime Movers Committee

In opening the report of the prime movers committee, the chairman, O. L. LeFever, superintendent, Northwestern Electric Company, raised the question as to whether or not the companies in the Northwest might be overlooking the advantage of developing power by the use of low-grade coal at the mine mouth or nearby instead of going into expensive hydroelectric programs.

The powdered-coal situation was re-

Delegates and guests at second annual meeting of the Technical Section of the Northwest Electric Light and Power Association.

viewed and discussed in a paper by E. W. Seckendorf, steam department, central district, Puget Sound Power & Light Company, in which he stated that this fuel was used in 1924 to an extent nearly double that of 1923. Of the new furnace designs now in operation for the consumption of pulverized fuel, he described the well-type furnace with tangential jets producing a centrifugal burning action.

Tom Perry, superintendent of stations, Northwestern Electric Company, made a report of an investigation into the efficacy and use of the Jones self-lubricating bearing. This investigation disclosed the fact that the bearing was in use to a considerable extent in paper mills, among other places, and that where it had replaced the oil-ring type bearing on high-speed paper machines it had effected a material saving in power and oil. In the discussion on this subject, G. A. Frogner, Crown Willamette Paper Company, Portland, corroborated the statements made in the report and elaborated on them by citing his experience with the bearing in the paper industry.

A consideration of automatic-draft control for plants burning hog fuel was taken up by C. C. Simeral, assistant chief steam engineer, Portland Electric Power Company, who stated that the application of such draft control had not been in general use in the Northwest because until recent years high efficiency had not been required in hog-burning plants. Of the three types of automatic control described, that actuated by steam pressure, he said, gave the most positive control. The three advantages to be gained by the use of an automatic system are: increased efficiency, reduction in operation and maintenance costs and greater capacity.

In the discussion on the matters presented by the prime movers committee, C. E. Carey, engineering division, Westinghouse Electric & Manufacturing Company, Seattle, inquired whether it was not a mistake for Northwest companies, relying largely on hydroelectric plants for prime power, to spend the amount of money necessary to make their steam plants highly efficient when those plants are used largely as auxiliaries. His thought was that such plants operating a small proportion of the time should be built and operated as cheaply as possible.

Underground Systems Committee

Considerable discussion was launched by the paper on the possibility of an inexpensive underground distribution system, presented by R. S. Carroll, chairman of the underground systems committee. The paper described an underground system designed to serve a typical high-class residence district in which a large range load was contemplated, and it was shown that the system could be installed at a cost of 10 per cent over the cost of an overhead system. P. P. Ashworth objected to some of the wording of the report because it appeared to leave the way open for the public to demand underground systems everywhere. Mr. Carroll then pointed out that it should be understood that the companies could not install this kind of system everywhere, but contended that certain insistent demands would have to be met and that the companies should begin to prepare for these demands by a consideration of the subject presented.

The meeting closed with the offering of resolutions thanking the Davenport Hotel for the facilities provided; the Spokane daily papers for the publicity of the meeting; and The Washington Water Power Company for the arrangements made and for the entertainment extended to the visitors through trips to its various power plants.

Third Metermen's Course Held at University of Colorado

Thirty-two metermen from various points in Colorado and Wyoming attended the third annual metermen's short course given in the electrical standardizing laboratory of the University of Colorado under the auspices of the extension division March 23-27. The course was under the direct supervision of Prof. C. M. McCormick, in charge of the standardizing laboratory. Eight electrical manufacturing companies were exhibitors, and the equipment included several new machines which had not been seen previously in that section of the country.

Various phases of the metermen's work and problems were entered into, recent developments in equipment were discussed and several talks were given on general electrical subjects of interest to those in attendance. A number of interesting papers dealing with meters, relays and other subjects in connection with the metermen's work were presented during the school session.

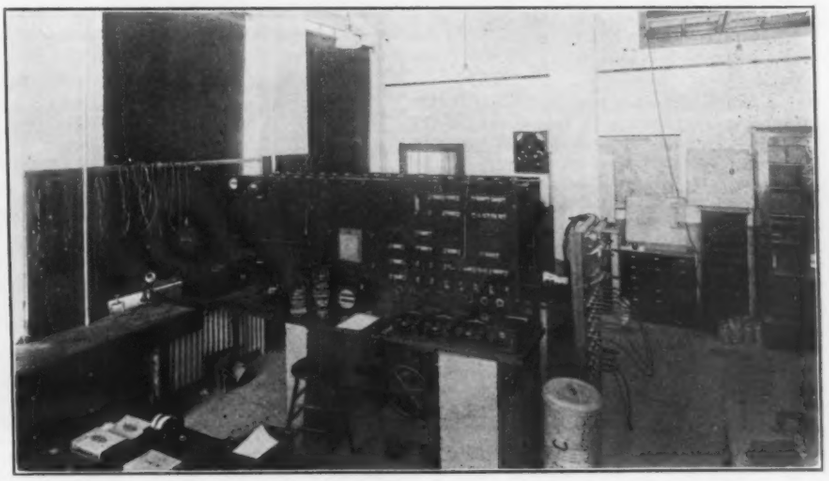
While guests at the university, the metermen were conducted on a general inspection tour, which included a demonstration and explanation of the electric pipe organ in Mackay Auditorium, one of the largest instruments of its kind in the country.

The party also inspected the new steam generating plant of the Public Service Company of Colorado four miles east of Boulder. Other features of the meeting were a demonstration of high-voltage testing, motion pictures on the electrical industry, demonstrations of radio equipment, and an inspection and explanation of the state oil laboratories maintained at the university.

Of special interest among the equipment displayed were a Cilbee current transformer testing set by Leeds & Northrup Company, Philadelphia, and a Westinghouse k.v.a. meter. Other exhibitors were: Bristol Company, Waterbury, Conn.; Superior Switchboard & Device Company, Canton, Ohio; Duncan Electric Manufacturing Company, Lafayette, Ind.; Sangamo Electric & Manufacturing Company, Springfield, Ill.; States Company, Hartford, Conn.; and the General Electric Company.

The course was the third of its kind to be given at the university. The attendance showed an increase of almost 50 per cent over 1924. Although the course was instituted as an experiment, its success has been such that it will be given each year hereafter.

New Street Lighting for Provo, Utah. —A new whiteway lighting system will be installed in the business district of Provo in the near future. Six blocks on Center Street have been created into a lighting district by the city commission by unanimous vote at its meeting on April 9.



Standardizing laboratory at the University of Colorado where the metermen's courses were held.

Information on N. E. L. A. Convention Transportation Presented

To assist delegates to the annual convention of the National Electric Light Association, to be held in San Francisco June 15-19, to visit some of the more important hydroelectric power developments of California, the convention transportation committee has issued information relative to the location of these installations. Under the listing prepared by the committee the name of the project, the railroad and route by which it may be reached, and the point for debarkation from trains has been given.

The list as prepared by the committee is as follows:

Pit River Development—Pacific Gas and Electric Company. Southern Pacific Company, Shasta Route, San Francisco to Portland. Debark at Redidng, Calif.

Big Bend and Cadibou Developments—Great Western Power Company. Western Pacific Railroad, Feather River Route, San Francisco to Salt Lake City. For Big Bend debark at Las Plumas, Calif., and for Caribou at Howells, Calif.

Kern River Development—San Joaquin Light & Power Corporation. Atchison, Topeka & Santa Fe Railroad or Southern Pacific Company, San Joaquin Valley Route, San Francisco to Los Angeles. Debark at Fresno, Calif.

Big Creek Development—Southern California Edison Company. Same as for Kern River Development.

O'Shaughnessy Dam, Hetch Hetchy Water and Power Development—City of San Francisco. One day trip from Yosemite Valley, Calif.

This list as prepared by the transportation committee is principally for the use of Eastern delegates who are not traveling on the Red Special, a train starting in and returning to the East. Other visitors to the convention must make out their itineraries, both to and from San Francisco, at the time of purchasing, if round trip rates are to be requested. Changes in routing will not be permitted after the trip has been started.

Four classes of delegates will attend the convention. All of these will be given the opportunity to take advantage of round-trip rates. The classifications as set up by the transportation committee are as follows:

Passengers on Red Special—Trip starts and ends in the East. All movement on special train.

One way special trains—Blue, Green and Orange Specials. This class of passengers will come to San Francisco on special trains, but will return as independent passengers. In purchasing round-trip tickets, entire routing must be designated. This is not subject to change after issuance of tickets.

Summer excursion tickets—Routes must be definitely determined before purchasing.

Reduced fares on certificate plan—Application has been made for reduced fares on the certicate plan from all points in California, Nevada, Oregon and Washington. Passengers must choose their route at time of purchase.

All round-trip tickets must be validated, and to assist the delegates in this, the transportation committee will maintain a booth in the Civic Auditorium where this may be done. Representatives of railroad companies also will be in attendance at the booth.

Fight on Denver Company's Bid for Franchise Continues

Considerable opposition still is being voiced against the franchise renewal of the Public Service Company of Colorado in Denver but the company is accelerating its effort in meeting all opponents. (Journal of Electricity, April 15, 1925, p. 284.) Officials of the company feel confident that a victory will be won at the city election, May 19. Principal causes of criticism up to the present have been the basing of rates on index cost figures of living compiled by the government and the fact that a longer period has not been provided for the preparation and study of the franchise submitted.

A bond issue for the municipal water plant and a franchise for a subsidiary of the Denver Tramway Company to operate motor buses on certain of the city streets also will be decided by the voters at the same time.

Electric Home to Be Displayed in Denver.—Another electric home is to be exhibited in Denver by the Electrical Cooperative League of that city. The home, an attractive Tudor bungalow, is located in the Washington Park district. The builder, E. S. Smith, plans to have the workmen off the job not later than May 15, and the league is planning to start the two-weeks demonstration several days later. One of the features of the home will be the lighting.

Navy's Largest Vessel Has Steam-Electric Power Plant

A steam-electric power plant of 140,000-kw. capacity will furnish the energy to drive the U. S. Navy's latest addition, the airplane carrier Saratoga. This ship recently was launched at Camden, N. J., and is the first of two originally designed to be the mightiest of battle cruisers and changed to serve the naval air service. The other, the Lexington, is to be launched this fall at Quincy, Mass. The modification of America's naval program, subsequent to the decisions reached at the conference on the limitation of armament, led to the conversion of these battle cruisers to airplane carriers. The Saratoga is 874 ft. long and 105 ft. abeam as compared to a length of 624 ft. and a beam of 97 ft. for the Maryland.

The combined ratings of the six electrically driven capital ships of the navy, California, New Mexico, Colorado, Tennessee, Maryland, West Virginia, are less than the rating of the single power plant of the Saratoga.

Four propellor shafts will be capable of driving the ship at the rate of 33 knots (39 m.p.h.). This is 12.6 knots in excess of the speed of the Maryland. Each shaft will be served by two motors, each rated at 22,500 hp. The generation equipment consists of four 35,200-kw. turbine generators. The power from this installation would be sufficient to supply completely the light and power demand of the city of Boston. The weight of the electric generation and propulsion machinery is 2,200 tons, and was supplied by the General Electric Company.

In addition to the main generating equipment there are six 750-kw., d.c., auxiliary turbine-generator sets which will furnish current for all electrical purposes other than main propulsion. Among the equipment so supplied are the steering gear, anchor windlass, ventilating fans and lighting systems.

The vessel carries no masts except a demountable radio mast. Of radio equipment, the Saratoga will have the last word as particular attention has been given to this item.

An immense clear, flat deck provides ample space for handling several planes, while the space beneath is so arranged that large numbers of planes can be stored, handled and repaired. Suitable hoisting equipment is provided to assure speedy handling. In order to maintain an unbroken expanse of deck the funnels are carried to the side of the ship.

Franchise Granted for Service in Woodland, Wash.—The city council of Woodland has granted to the Ridgefield Light & Power Company a 30-year franchise to sell energy in Woodland and to install the necessary equipment. It is stated that installation will begin within thirty days and be completed in six months. The Puget Sound Power & Light Company serves the city now.

One of the illuminated signs used by the British Columbia Electric Railway Company to stimulate the use of electricity and the use of streets cars in Vancouver. The board is 50x12½ ft. and is erected on a two-story building. The message on the sign is changed every two months.

Great Northern Is to Electrify 30 Miles of Main Line

Electrification of 30 miles of the main line of the Great Northern Railway Company will be started immediately, according to an announcement of Ralph Budd, president of the company. It is estimated that the electrification will entail an expenditure of $1,500,000.

Plans for the work have been completed, and contracts for the electric motors and locomotives required will be let shortly. It is planned to complete the work within ten months. The stretch between Skykomish, on the west side of the mountains, and Verne, the first station on the east side of the Cascade tunnel, will be electrified. This stretch includes the tunnel which is 13,873 ft. long. At the present time electric locomotives are used to haul the trains through the tunnel.

The capacity of the railroad company's 6,500-hp. hydroelectric plant in the Tumwater Canyon of the Wenatchee River will be increased to 10,000 hp. to supply the energy needed to haul trains over the addition to the electrified system.

Revision of Denver Electrical Code Has Been Started

Not to be outdone by other progressive cities in the revision of municipal electrical codes, the electrical industry in Denver, with the authorization and sponsorship of the city authorities, has started work by the appointment of a representative committee to assist C. F. Oehmler, city electrician, in bringing the 1922 code of that city up to date.

Present plans provide for the compilation of an entirely new code to include all the desirable features of the rules now in effect in Denver. With a view to the future, the committee plans to outline a code in loose-leaf form, one that will be perpetual rather than one which necessitates the publication of a new book with supplementary features each year.

According to reports, codes of twenty-five other cities are being studied and special consideration is being given to the Portland, Ore., regulations.

Members of the code revision committee are: C. F. Oehmler, chairman; W. W. Crocheron, manufacturers; J. D. Nicholson, jobbers; W. J. Guscott and C. G. Gramcko, contractors; C. B. Noxon, journeymen; L. A. Barley, underwriters; M. M. Koch, Public Service Company of Colorado, and S. W. Bishop, executive manager of the Electrical Cooperative League as secretary of the committee.

Manual for Employees Is Issued by Washington Utility

The Washington Water Power Company, Spokane, through its public relations department, has prepared for the information of its employees a manual in the form of a binder designed to hold twelve bulletins or chapters. The foreword states that it is felt all officers and employees can benefit much by the suggestions contained in the manual.

The book is prepared jointly with the National Electric Light Association, and it is suggested that full advantage be taken of the N.E.L.A. courses and other valuable information. Some of the subjects touched upon in the manual are: Growth of the Industry; Financing a Corporation; Non-Competitive Service; Regulation of Utilities; Political Ownership and Taxation; Relation of Employees to the Public; Qualifications and Work; Present Day Developments; Our Company and the Community.

To encourage employees of the company to read and study the manual the company has announced that two prizes will be awarded to employees who submit the best concluding chapter for the manual. The material is to be based upon that in the first eleven chapters. A first prize of $50 and a second of $25 will be awarded after the contest closes on May 16.

The Tale of a Cake Contest

By E. J.

In April San Francisco held
A Gas Appliance Week,
And many special features
The public's eye did seek.

Among them was a contest
To see who best could bake
In an up-to-date gas oven
A delicious, homemade cake.

After the judges had passed upon
All the cakes before their eyes,
Mrs. George W. Skipton's angel food
Was declared to have won first prize.

"In what model did you cook it?"
Her proud smile did not change—
"The prize-winning cake was baked,"
she said,
"In a Westinghouse electric range."

(Note: The rules which Mrs. Skipton read and under which she entered the contest did not specify the use of a gas range.)

Hydroelectric Power Plant to Be Erected at Oroville

Construction of a $350,000 power and irrigation plant in the Similkameen River at Oroville, Wash., will be started early in June or July by the Okanogan Light & Power Company of that town. E. J. Broderick, engineer for the company, states that the development involves the erection of a dam 200 ft. wide and 60 ft. high. It is planned to develop about 20,000 hp. at the site.

Incorporators of the company, which was granted a franchise recently covering power lines in the town of Oroville, are D. J. Broderick and Eugene Hockett, of Oroville and L. B. Stedman of Seattle. The company is incorporated for $100,000.

Stone & Webster Officials Visit Northwest.—Making a trip of inspection and study of business conditions in the Pacific Northwest, C. A. Stone, E. S. Webster, Frederick Pratt and Don Barnes, officials of Stone & Webster, Inc., of Boston, and Eastern financial agents for the Puget Sound Power & Light Company, recently visited Seattle and the Puget Sound country. While in Seattle the party inspected the properties of the Puget Sound Power & Light Company throughout the Northwest, and joined in the latter company's celebration of twenty-five years of public service in western Washington.

Natrona Power Company Bought by Byllesby Interests

The Natrona Power Company, Casper, Wyo., has been purchased by H. M. Byllesby & Company, according to a recent announcement by J. J. O'Brien, president of the latter company. It will be operated as the Wyoming division of the Mountain States Power Company, Albany, Ore., also a Byllesby property.

The Natrona company has three steam electric power plants with a combined capacity of approximately 7,000 hp., and more than 71 miles of high-tension transmission and distributing lines serving electric power and light to 6,727 customers in Casper, Mills and Evansville. Its gross earnings for 1924 amounted to $557,805 and net earnings to $249,369.

Casper, the site of the power plant, is the center of the Wyoming oil industry and the largest city in the state, having an estimated population of 32,276. It is also a division point of the Chicago, Burlington & Quincy and Chicago & Northwestern Railroads.

Investigation of Electric Rates in San Francisco Asked

An investigation of electric rates charged by the Pacific Gas and Electric Company and the Great Western Power Company in San Francisco is asked in a resolution presented to the board of supervisors of that city April 27, 1925, and referred to the public utilities committee of the board for recommendation. The resolution also asks the city attorney to take the necessary steps before the California State Railroad Commission to bring about a reduction in rates.

The resolution cites the reports presented by the two companies to the Railroad Commission, pointing out that the Pacific Gas and Electric Company derived 34 per cent of its gross revenue from the sales of 27.9 per cent of its energy in the city during 1924. In the same period the Great Western Power Company is said to have sold 23.4 per cent of its power in San Francisco and derived 36 per cent of its gross revenue therefrom. The resolution further declared that the average retail kw-hr. charge in San Francisco of 3.68 cents is 50 per cent higher than the average retail charge to consumers on other parts of the system.

Lighting Bulletin Issued by Westinghouse Company.—"Lighting the Home," Lighting Bulletin E-105 of the Illumination Engineering Bureau of the Westinghouse Companies, issued by the Westinghouse Lamp Company, New York, contains many valuable recommendations for lighting the home. In the beginning it gives a wiring plan for a typical modern home, both first and second floors, and follows this with recommendations and suggestions for lighting the living room, sun porch, dining room, breakfast room, kitchen, halls and entrances, bedrooms, sewing room, bathroom, laundry and basement, and garage and workshop. Accompanying the suggestions for each room are photographs of lighting arrangements, a wiring diagram, illustrations of types of luminaires and styles of Mazda lamps. The rest of the bulletin is devoted to selection of Mazda lamps for home lighting, and wiring for the home.

News of the Electragists

Electragists to Hold Quarterly Meeting in Visalia

Everything is in readiness for the quarterly meeting of the California Electragists to be held at the Hotel Johnson, Visalia, Saturday, May 9, 1925. An interesting program has been arranged by Walter F. Price, executive secretary. The details of the unified body of California Electragists will be explained. A number of the members of the southern division are planning to be present at this time to become more familiar with the methods used by those in the northern division. The executive committee will meet at 9:30 a.m. Saturday, and the general open meeting will be held at 1:30 in the afternoon.

Special Pullman cars will be attached to the Southern Pacific train to accommodate those leaving from the Bay district. The ferry which leaves San Francisco at 11:40 p.m. Friday night will connect with this train, which will arrive in Visalia at 8:50 a.m. The train will leave Visalia at 8:00 p.m. Saturday and arrive in San Francisco at 8:10 Sunday morning.

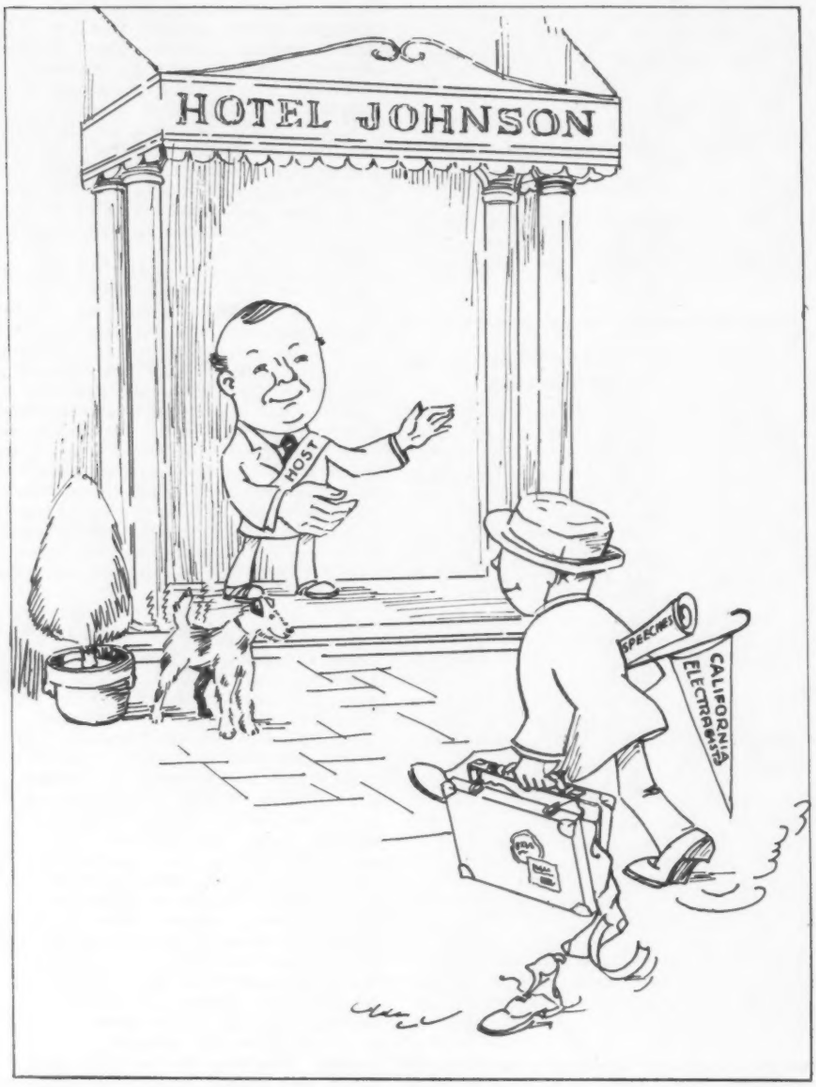
Name Adopted by Association at Recent Meeting at Napa

The "Tri-County Electrical Development League" was the name chosen at the last meeting of the recently formed association of electrical contractors and dealers of Napa, Solano and Sonoma Counties, Calif. The meeting was held at the Brown Hotel in Napa and was presided over by President Earl Wilson, electragist of Napa.

The principal speaker of the evening was R. A. Balzari, of the Westinghouse Electric & Manufacturing Company of San Francisco, who addressed the meeting on the benefits to be derived from applying courtesy in business. Short talks also were made by LeRoy H. Crandall, California Electrical Bureau, and Roy Dryer, Western Electric Company, both of San Francisco.

Future meetings will be held on the second Thursday of each month, at a place to be named by the program committee.

A. B. Campbell Electric Company, Orland, is among the recent firms to become members of California Electragists.



Where the Electragists will be May 9.

Book Reviews

ELECTRICAL DRAFTING AND DESIGN

By CALVIN C. BISHOP. 165 pages, 65 figures, 73 tables and charts. $2. Published by McGraw-Hill Book Company, New Yorfl, N. Y.

Comparatively few books have been published on the subject of electrical drafting and most of these have been of a rather elementary character. This book, according to the author, attempts to bridge the gap between the usual course in mechanical drafting as taught in technical and vocational schools and the work required in the office of an engineer, a contractor, or a power company.

The problems throughout are of a practical nature and the treatment of them is similar to the manner in which they would be handled in an office. No attempt has been made to go into the design of electrical machinery but rather the application of such machinery and particularly the layout of the wiring involved is considered.

After an introductory chapter on general instructions for mechanical and electrical drafting, chapters follow on the subjects of electrical symbols and their use; design of generator and feeder panels; 3-phase panels and outdoor substations. Two chapters are devoted to wiring under the subjects of laying out wiring and residence wiring, followed by a chapter on artificial illumination.

About one-half of the book contains tables and charts covering standard equipment with the data and dimensions necessary for the designer when this equipment is incorporated in the design of electrical installations.

The subject is handled throughout the book in a clear and logical manner and no doubt will serve the purpose of bridging the gap between a course in mechanical drafting and drafting room work as handled in the office of an engineering firm. However, the book would be more valuable if the subjects were treated in somewhat greater detail, particularly in the chapters on generator panels and outdoor substations.

At the end of a number of chapters lists of problems are given which should assist the student in obtaining practice in the problems which he may expect in an engineering drafting room.

E. R. S.

Meetings

Northwest Association Public Relations Section Meets

At a meeting of the executive committee of the Public Relations Section of the Northwest Electric Light & Power Association, at Seattle, April 3, a number of reports of subcommittees were heard and discussion had on many subjects related to section activities. W. H. Ude, director of public relations, The Washington Water Power Company, Spokane, chairman of the committee, presided over the meeting, which was attended by six committeemen and eight others associated with public relations work.

H. J. Gille, sales manager, Puget Sound Power & Light Company, reported on the activity of the Washington Committee on the Relation of Electricity to Agriculture, stating that plans are under way for carrying on this summer a survey of farming districts of Washington similar to the survey conducted last year by the Oregon committee in that state. E. H. Thomas, director of the Washington Committee on Public Utility Information, Seattle, reported for the committee on cooperation with educational institutions; H. Peets, public relations department of the Puget Sound Power & Light Company, reported for the customer-ownership committee, and L. A. McArthur, vice-president and general manager, Pacific Power & Light Company, reported for the committee on public speaking. Other subjects discussed were: Farm electrification, beautification of grounds, getting information printed in the press, and radio interference.

Mrs. L. A. McArthur, who was present, was chosen to head the women's public information committee of the Northwest association. This committee is new to this geographic division, and it is expected will be effective in spreading information about the public utility business through women employees and wives of employees of the various companies. The personnel of this committee has not been appointed.

Officers of Long Beach Electric Club Announced

The Electric Club of Long Beach, W. Lane, electrical contractor; first vice-president — T. R. Reid, electrical contractor; second vice-president—R. B. Farley, district superintendent, Southern California Telephone Company; secretary and treasurer—V. L. Ringle, Southern California Edison Company; sergeant at arms—Clyde Baty, electrical contractor.

Committee chairmen appointed are: Entertainment—J. C. Kyle; membership—W. D. Phillips; publicity—F. D. Stuthman, all of the Southern California Edison Company; public policy—L. B. Marsh, electrical jobber; visiting and relief—E. B. Cummings, assistant district manager, Southern California Edison Company. R. W. Abright, city electrician-inspector, is parliamentarian and William Shipp, electrical contractor, is trustee of committees.

Brigham City Men Make Visit to Cutler Power Plant Site

Several automobile loads of business and professional men from Brigham City, Utah, visited the site of the Utah Power & Light Company's new hydroelectric development at Cutler on April 3. At the time of their visit about 250 men were employed in the preliminary work of excavating, grading and erecting new buildings which will be a part of the construction camp.

The visitors were received by L. B. Fuller, who has charge of the work, and were informed as to the company's plans in connection with the project. A great amount of interest is being manifested by the citizens of the section in which the new plant is to be located, and already many visitors have been welcomed.

Electric Truck School to Be Held in San Francisco

The National Electric Light Association will conduct an electric truck school in San Francisco, June 8-13. The faculty will be composed of men from the East headed by E. S. Mansfield of the Edison Electric Illuminating Company of Boston, who is chairman of the truck school committee of the N.E.L.A.

An invitation is extended to anyone interested in electric truck transportation to attend these sessions. Those intending to be present are asked to send their names to John L. Farley, Pacific Gas and Electric Company, San Francisco.

COMING EVENTS

Southwestern Public Service Association—
Annual Convention—Rice Hotel, Houston, Texas
May 5-8, 1925

Pacific Coast Electrical Supply Jobbers' Association—
Quarterly Meeting. Arlington Hotel, Santa Barbara, Calif.
May 7-9, 1925

Electrical Supply Jobbers' Association—
Annual Convention—Hot Springs, Va.
June 1-6, 1925

Associated Manufacturers of Electrical Supplies—
Annual Meeting—Hot Springs, Va.
June 8-13, 1925

Northwest Electric Light and Power Association—Annual Convention —
Gasco Building, Portland, Ore.
June 12, 1925

National Electric Light Association—
Annual Convention—San Francisco, Calif.
June 15-19, 1925

Seattle Club to Hold Golf Tournament.—The Electric Club of Seattle has formulated plans for a proposed golf tournament, the second annual affair of this nature conducted by the club. Play will begin not later than May 1, and about 60 men of the organization are expected to participate, with first and second flight. There will be two sets of prizes, besides the President's Cup, donated by H. J. Martin, president of the club, and won for the first time by J. C. Zancker of the Western Electric Sign Company. This cup must be won three times to be retained. The committee in charge of the proposed tournament is H. J. Martin, Earl Peterson of the Westinghouse Electric & Manufacturing Company, and J. J. Agutter of the J. J. Agutter Company.

Pacific Power & Light Company Holds Managers' Meeting

As part of the public relations work of the Pacific Power & Light Company, Portland, L. A. McArthur, vice-president and general manager, recently called together all the district managers and heads of departments for a two-day meeting at Walla Walla, Wash. The following, in addition to Mr. McArthur, were on the regular program for talks on subjects pertaining to different phases of relations with the public: Will T. Neill, superintendent of rates and service; G. C. Sawyer, sales manager; S. E. Skelley, manager of investment department; and George L. Myers, assistant to the president.

In addition to the regularly scheduled talks, there was discussion by all present on ways and means of presenting company affairs properly to the public. One of the features of the meeting was a session for the women, both employees and wives of employees, presided over by Mrs. L. A. McArthur, at which each woman present told what she could do or had done to further the interests of the company among her circle of friends and acquaintances.

Industrial Heating School for San Francisco June 9-13

The Pacific Coast Electrical Association will conduct an industrial heating school in San Francisco June 9-13. It will be under the supervision of the Westinghouse Electric & Manufacturing Company, which will have charge of the school in this geographical division of the National Electric Light Assocation. The instructors for this school will be Pacific Coast men, G. A. Reed, vice-chairman of the committee, being in direct charge.

The first three half-days will be devoted to lectures and general discussion of industrial heating problems. The next three half-days will take up specific applications with special reference to Pacific Coast conditions. The final period of three half-days will be used to inspect equipment displays of manufacturers and in making inspection trips to different industries.

All interested in this field are invited to the meetings. Those expecting to attend are asked to send their names to John L. Farley, Pacific Gas and Electric Company, San Francisco.

Utah Engineer Talks on Cutler Project.—J. R. Jarvis, superintendent of lines and service in the Ogden division of the Utah Power & Light Company, was the principal speaker at the monthly meeting of the Ogden chapter of the American Association of Engineers, held at Ogden, Utah, on the evening of March 21. Mr. Jarvis described in considerable detail the main features in connection with his company's new hydroelectric project, upon which work is now starting at Cutler on the Bear River. He also discussed the company's Bear Lake and Bear River system.

Japanese Steam Plant Completed.—The first unit of the Amagasaki steam plant of the Nippon Electric Power Company was completed about the end of last year and immediately put into operation. It will develop 25,000 kw. The ultimate capacity of the plant will be 50,000 kw.

Personals

J. C. Clark, formerly professor at Iowa State College in charge of electrical engineering research, recently resigned to join the sales engineering staff of the Pacific Electric Manufacturing Company of San Francisco, designers and builders of oil circuit breakers and other high-voltage line equipment. Prior to his association with the Iowa

J. C. CLARK

State College research department Mr. Clark was a member of the staff at Stanford University, Palo Alto, Calif., where for twelve years he had been identified with the high-voltage research carried on there. Mr. Clark has taken an active part in the affairs of the American Institute of Electrical Engineers, being a past chairman of the San Francisco Section. He is an alumnus of Harvard University and of Iowa State College. He brings a wide knowledge and a varied and extensive experience in practice to his new position.

J. A. Gelzer, for many years connected with the automotive sales department of the Wagner Electric Corporation, St. Louis, has been appointed sales manager of the automotive division of that company with headquarters at the home office.

Paul Overton, of the Southern California Edison Company, Los Angeles, was a recent visitor in San Francisco.

A. C. Joy of the publicity department of the San Joaquin Light & Power Corporation, Fresno, Calif., was a recent visitor in San Francisco.

Harry D'Almaine has been appointed district manager for Charles Cory & Son, Inc., New York, in charge of the Chicago branch at 22 West Quincy Street. He will handle also the marine equipment business for ships' signaling, communicating and lighting equipment on the Great Lakes.

D. S. Jones, Center, Colo., was appointed a member of the Colorado public utilities commission to succeed **Grant Halderman,** who has completed his term.

Felix Van Cleef, Van Cleef Brothers, Chicago, was a recent visitor to the Pacific Coast, spending considerable time in San Francisco.

J. M. Lafflin, chief clerk at Walla, Walla, Wash., for the Pacific Power & Light Company, Portland, has resigned to take up his residence on his berry ranch at Shelton, Wash. His resignation has been made the occasion for the promotion of the following chief clerks: **H. M. Dunkelberger,** from Astoria, Ore., to Walla Walla; **W. L. Parkhurst,** from The Dalles, Ore., to Astoria; **L. V. Stram,** from Waitsburg, Wash., to The Dalles; **J. K. Bokius,** from Goldendale, Wash., to Waitsburg; **E. G. Richards,** from White Salmon, Wash., to Goldendale.

A. F. Henderson, assistant to comptroller, Puget Sound Power & Light Company, Seattle, was transferred on April 1 to the Boston office of Stone & Webster, Inc. His place in Seattle has been filled through the appointment of **D. J. Torrance.**

J. P. Davidson, Pacific Coast representative of the Estate Stove Company; **C. B. Nelson,** supervisor, Estimates and Records, Pacific Gas and Electric Company; **A. G. Smith,** personnel department, Pacific Telephone & Telegraph Company, and **R. T. Stephens,** manager electric sales, Pacific Gas and Electric Company, were among the new members present at the recent meeting of the San Francisco Electrical Development League.

H. E. Leigh, Denver, Colo., has been made manager of the Westinghouse department of the Mine & Smelter Supply Company in that city. He succeeds **Thomas Yonley,** who has resigned to become actively associated with the Westinghouse company in Indianapolis.

George E. Tribble has been appointed regional director for the Electric Vacuum Company, Inc., Cleveland, with headquarters at 575 Mission Street, San Francisco.

Harry G. Holabird, for many years representative of the Ohio Brass Company, Mansfield, Ohio, has severed his relations with that company to go into business for himself as manufacturers' agent. He has established quarters at 451 East Third Street.

A. H. Holtermann of Holtermann's Electric Shop, San Francisco, will operate the wholesale department of that business under the name of "A. H. Holtermann, Manufacturers' Representative," with headquarters temporarily at 89 Market Street.

Giles Hunter, recently employed in the accounting department of the Tacoma Railroad & Power Company, Tacoma, has moved to Bellingham, where he will be assistant chief clerk of the northern district of the Puget Sound Power & Light Company, Seattle.

C. H. Hagey, of the protection engineering department of the Southern California Edison Company, Los Angeles, was recently designated as supervisor of the eastern and southern divisions. **G. H. Whitney** of the same department has been appointed supervisor of the northern and western divisions. These men will thus be directly responsible for the satisfactory operation of all relays and other protective equipment within their divisions of the system.

Lee Bennett, for some years manager of the Sandpoint, Idaho, division of the Mountain States Power Company, Albany, Ore., recently has been promoted to be local manager at Corvallis, Ore., taking the place of **F. E. McKenna** who has been transferred to Albany as sales manager.

C. E. Skinner, assistant director of engineering, Westinghouse Electric & Manufacturing Company, Pittsburgh, attended the meetings of the International Electrotechnical Commission held at The Hague, Holland, April 16 to 24, inclusive.

H. C. Bernsten, vice-president, Lockwood-Shackelford Company, Inc.; **R. M. Kerschner,** manager Hubbard & Company, and **John D. Trapp,** salesman, Alexander & Lavenson Electric Supply Company, recently have become members of the San Francisco Electrical Development League.

H. N. Porter recently has been appointed sales manager for the States Company at Hartford, Conn.

W. D. Ward, representing the New York office of the Pelton Water Wheel Company, was a recent visitor in San Francisco.

H. T. Plumb, electrical engineer connected with the Salt Lake City office of the General Electric Company, is among the forty-three employees of the company to be honored with awards given workers under the Charles A. Coffin foundation for the year 1924. Mr. Plumb has been with the company fourteen years. When the disaster occurred at the Castle Gate coal mine at Castle Gate, Utah, in which an explosion resulted in the death and injury of a large number of miners, Mr. Plumb went to the scene of the disaster and helped with the rescue work for six days. He initiated a systematic direction of the work at the mine portal through which bodies were brought from the mine, and organized a telephone service for rescuers in the mine. He took charge of the supplies, kept a record of telephone conversation from the rescue workers, and directed much of the work in the mine by telephone. It was because of this service to a customer in time of disaster that the award was made him. In addition to the Coffin

H. T. PLUMB

certificate he was given $250 in General Electric Employees Securities corporation bonds, bearing 8 per cent interest. Mr. Plumb is well known in the electrical industry and has taken an active part in its affairs. He is a past president of the Utah Society of Engineers, and in 1921 acted as general chairman of the committee in charge of the annual A.I.E.E. convention held in Salt Lake City in that year. He is a graduate of the University of Wisconsin and was formerly professor of electrical engineering at Purdue University.

A. E. Wishon, who has been general manager of the San Joaquin Light & Power Corporation, Fresno, Calif., since 1920, recently assumed additional responsibilities as vice-president of the company when he was elected to that position following the acquirement of control of the San Joaquin company by the Western Power Corporation of New York. In addition to his many duties in connection with the Fresno utility, Mr. Wishon always has taken a prominent part in the affairs of the electrical industry and has given much of his time to its development and progress. He has been particularly active in Association work. He served as president of the Pacific Coast Section of the National Electric Light Association for the term 1919-1920, and in 1922 was appointed chairman of the committee on amendments to the constitution of the Pacific Coast Electrical Association, as the Pacific Section had been named. At the present time he is chairman of the customer-ownership committee of the National Electric Light Association and a member of the Public Policy Section of the Pacific Coast Electrical Association. The San Joaquin Light & Power Corporation has pursued the policy of customer-ownership with marked success, and the subject is one in which Mr. Wishon is deeply interested. He recently delivered an address, "Now and Tomorrow with Customer-Ownership," at the semi-annual meeting of the Academy of Political Sciences in New York.

A. E. WISHON

W. H. McGrath, vice-president of the Puget Sound Power & Light Company, Seattle, recently returned to his desk after a short sojourn in California.

H. C. Ross, Pacific Gas and Electric Company, Fresno, Calif., was a recent visitor in San Francisco.

J. J. Gibson, vice-president, Westinghouse Commercial Investment Company, New York, spent several days in Seattle recently inspecting the company's properties in that city.

J. C. Clark, sales engineer, Pacific Electric Manufacturing Company; **L. H. Jetton,** telephone engineer, Pacific Telephone & Telegraph Company; **E. H. Kinney,** supervisor shops and vehicles, Pacific Telephone & Telegraph Company; and **L. S. Newell,** manager and buyer, Dunham, Carringan & Hayden, recently have been added to the membership roll of the San Francisco Electrical Development League.

J. S. Lapp, general manager of the Lapp Insulator Company, Le Roy, N. Y., manufacturers of Lapp high-tension porcelain insulators, recently visited the Pacific Coast on a tour of inspection of local conditions. While on the Coast Mr. Lapp gave a series of illustrated lectures to engineers on the subject of high-tension porcelain insulators in Seattle, Portland, San Francisco and Los Angeles. He was assisted by his Coast representative, **S. H. Lanyon,** New Call Building, San Francisco.

H. E. Baker, district manager at Hood River, Ore., for the Pacific Power & Light Company, Portland, has been given charge of the White Salmon, Wash., district, formerly operated under a separate district organization. The new Hood River-White Salmon bridge crossing the Columbia River at this point has made possible the consolidation of the two districts under one organization.

D. C. Green, vice-president and general manager of the Utah Power & Light Company, has been elected a director of the Utah Associated Industries.

H. A. Wagner, president, Consolidated Gas, Electric Light & Power Company, Baltimore, and organizer and first president of the Wagner Electric Manufacturing Company, St. Louis, Mo., has been elected a director of The Society for Electrical Development to represent central station interests.

L. F. Hunt, formerly of the protection engineering department of the Southern California Edison Company, Los Angeles, has been appointed development engineer.

Harold J. Payne, formerly of the editorial staff of Chemical and Metallurgical Engineering, New York, has joined the staff of The Society for Electrical Development. His work will be in connection with promoting the use of electric trucks both for delivery work and in the industrial field.

H. H. Jones, vice-president in charge of operations of the Northern States Power Company, Minneapolis, Minn., and formerly president and general manager of the San Diego Consolidated Gas & Electric Company, was a recent visitor in his former "stamping grounds," San Diego.

W. F. Raber, general manager of the San Diego Consolidated Gas & Electric Company, returned recently from a trip to Chicago where he attended the annual meeting of the board of directors of Standard Gas & Electric Company.

F. Harold Smith, Westinghouse Electric Company, Los Angeles, was in San Francisco recently.

C. O. Woodworth, formerly of the Spinney-Woodworth Company, Denver, has withdrawn from the company and become associated with Harry Schockett of that city.

G. E. Boreham, until recently chief electrician U. S. A. Quartermaster Department, Fitzsimmons General Hospital, Denver, has been transferred to the U. S. V. B. Hospital No. 102, at Livermore, Calif., in the same capacity.

C. Reeves has been sent to Denver by the Edison Lamp Works of the General Electric Company to assist **George O. Hodgson** district sales manager of that company in the Rocky Mountain region.

M. M. Johnson, Hubbard & Company, Pittsburgh, was a recent visitor in Salt Lake City.

H. Anderson, district manager at White Salmon, Wash., for the Pacific Power & Light Company, Portland, has been promoted to that position at Prosser, Wash., taking the place of **J. C. Gest,** who has joined the merchandise sales department of the company with headquarters at Lewiston, Idaho.

Ted Nollenberger, of the electrical contracting firm of Nollenberger & Dorner, Denver, is conducting the business solely, the partnership having been dissolved.

C. L. Lewis, general manager of the Electro-Kold Corporation of Spokane, recently made an extensive tour of Pacific Coast cities, visiting all the important points.

D. C. Jackson, formerly sales manager, Dudlo Manufacturing Corporation, Fort Wayne, Ind., has joined the staff of A. S. Lindstrom, San Francisco.

Obituary

R. E. Gorton, manager of the Packard Lamp Division, National Lamp Works of General Electric Company for the past fifteen years, died April 13 after a brief illness at his home in Warren, Ohio. Mr. Gorton was one of the pioneers in the incandescent lamp industry, having entered it in 1894.

Joseph Schoemer, president of the Seattle Lighting Fixture Company, prominently identified with this branch of the electrical industry for the past twenty years, died in Seattle on April 11.

C. O. Poole, identified with hydroelectric construction in California for the past twenty-five years, died in Los Angeles April 2. He was born in Salisbury, Mass., in 1859, coming to the Pacific Coast in 1883 to take up engineering work. In 1900 he was in charge of construction on the first high-tension transmission line built into San Francisco. Four years later he became chief engineer of The Southern Sierras Power Company, Riverside, Calif., and allied companies, and for twenty years was active in field service. In 1924 he resigned to become consulting engineer of the organization, retaining that position until the time of his death.

C. O. POOLE

TRADE NOTES

General Electric Company, Schenectady, has announced recent issuance of an attractive booklet entitled "Switchboards in Architecture," containing twenty-two pages of reprints of advertisements and other data of value to those planning installation of switchboards in building structures.

Pass & Seymour, Inc., Syracuse, N. Y., claims that by adding a metal locating lug to all P.&S. porcelain socket bodies, with the single center screw, a saving of time for the wireman in assembling these wiring devices is assured. The metal lug on the body fits a corresponding depression in the caps and bases and indicates the position for assembling. They are also exploiting a new brass shell socket for gas-filled lamps, known as the P.&S. super standard key socket.

Harvey Hubbell, Inc., Bridgeport, Conn., recently has brought out a new device which converts a single convenience outlet into a duplex. It has the advantage of being exceptionally small and fits snugly up against the outlet plate.

Westinghouse Electric & Manufacturing Company recently has developed a new leakproof sleeve bearing for electric motors, designed to prevent the leakage of oil into the windings or the entrance of dust and grit into the bearings. It is known as the Sealed-Sleeve bearing and is claimed to be so constructed that is is almost airtight, preventing air from getting in and oil from leaking out.

General Engineering & Supply Company, New York City, recently has issued Bulletin Q 48, describing the "Gesco Portable," its new powerful high-frequency machine.

The Okonite Company, Passaic, N. J., has announced the opening of a sales office in St. Louis at 444 Frisco Building. It will be in charge of L. R. Mann.

Sangamo Electric Company, Springfield, Ill., announces the development of a maximum-demand attachment for use on its horizontal polyphase watthour meters.

P. A. Geier Company, Cleveland, recently has published a new booklet entitled "For Health, Strength and Beauty," that contains much useful information on vibratory massage and the Royal electric vibrator. The booklet is offered to the trade for free distribution.

Wagner Electric Company, St. Louis, has issued recently Bulletin No. 142, as well as Bulletins 63 and 64, which are small pocket-size editions, entitled Ward Leonard Vitrohm Resistor Units and Motor Starters and Controllers for Alternating Current.

Cutler-Hammer Manufacturing Company, Milwaukee, has announced the development of a new line of starters for use with Fynn-Weichsel motors.

Wheeler Reflector Company, Boston, recently placed a new device on the electrical market, known as the Wheeler K-7, a non-breakable porcelain enameled steel reflector designed for use with 75, 100 and 150-watt lamps.

The Square D Company, Detroit, has announced a new power panel construction embodying several new features in panel board design.

Haag Brothers Company, Peoria, Ill., recently has introduced a new washing machine under the name "Vortex," which it is offering to the trade at a list price of $125. This machine has many new features, it is claimed.

The Divine Electric Shop, Sumner, Wash., was completely destroyed in a recent fire, with a loss of approximately $10,000. Clarence E. Divine, the owner, has opened a new shop in the Althen Block.

Herman H. Sticht & Company, New York City, have announced their Bulletin No. 135, "The '2 in 1' Megohmer," descriptive of its instrument for resistance, insulation or voltage measurement.

"Newt" Graham, of the Los Angeles firm known as Graham Reynolds Electric Company, sure "socks" a mean "apple" when he gets on the golf course. The photographer intended to catch "Newt" in the middle of his swing at the brand new pellet he was giving a personally conducted tour of the Del Monte links, but due to the speed of the golfer, "Newt" was almost through with work of getting distance and accuracy when the shutter clicked. Incidentally, the drive was a peach.

W. A. Jones Foundry & Machine Company, Chicago, announces that its new General Catalog No. 30 is now ready for distribution. The catalog contains 448 pages of data on power transmission machinery.

The Yale Radio Electric Company, electric and radio jobbers, has moved into its new building at 1111 Wall Street, Los Angeles. The concern was situated at 4816-18 South Vermont Avenue, Los Angeles.

Hisey-Wolf Machine Company, Cincinnati, recently has reduced its price on all electric tools.

Holophane Glass Company, New York, recently has developed a new type of reflector, designed for 75,100 and 150-watt lamps. It is claimed to be especially suitable for the illumination of aisles between compartments in substations and an admirable example of how asymmetric light distributions may be moulded to fit specific types of interiors so as to give the greatest possible utilization efficiency of the generated light.

Condit Electrical Manufacturing Company, South Boston, invites attention to its N4 oil motor starter arranged for thermal cutouts, described in detail in their recently issued industrial handbook.

George A. Gray Company, with offices in San Francisco and Los Angeles, has secured the agency for the eleven Western states for the Appleton Rubber Company, Franklin, Mass., manufacturers of the O. K. brand friction tape and splicing compounds.

Crocker-Wheeler Company, Ampere, N. J., recently has developed a new remote control starter for squirrel-cage induction motors.

Appleton Electric Company, Chicago, has opened a branch office and warehouse at 340 Azusa Street, Los Angeles, where it states it will carry a complete stock of all Appleton electric products. The office will be in charge of D. G. Welling, and W. S. Sweet will act as his assistant. B. A. Wagner of the Electric Agencies Company of San Francisco will be in charge of the northern California business.

Brown Instrument Company, Philadelphia, recently has issued catalog No. 32, entitled "Measuring CO_2 Electrically." The catalog is well illustrated with drawings and photographs.

George W. Dunham Corporation, Utica, N. Y., recently has placed a new electric washer on the market known as the Whirldry Washer, which is of the centrifugal drying type. The company claims the tub has many new and advantageous features.

Wagner Electric Corporation, St. Louis, recently has issued an attractive illustrated booklet depicting its newest fans and their special features.

Curtis Lighting, Inc., Chicago, recently has prepared a new catalog covering the latest designs in church lighting. It also shows new types of office fixtures.

Sundh Electric Company, Inc., of Newark, N. J., has issued recently a descriptive bulletin covering its line of equipment. The bulletin is well illustrated with diagrams and drawings.

Buffalo Gas Radiator Corporation, North Tonawanda, N. Y., recently has issued a new circular describing its Niagara electric steam radiators.

U. S. Electrical Manufacturing Company, San Francisco and Los Angeles, has announced a new U. S. automatic-start motor, which is an improved self-starting motor with no moving parts. A pamphlet describing this motor contains photographs and diagrams and may be had on application.

Fulton Iron Works Company, St. Louis, has issued recently for general distribution on request the Fulton-Diesel Bulletin No. 807 on the Diesel Engine in medium powered central stations.

The Gordon Radio & Electric Company, Seattle, will move to new and larger quarters at 1610 Fourth Avenue.